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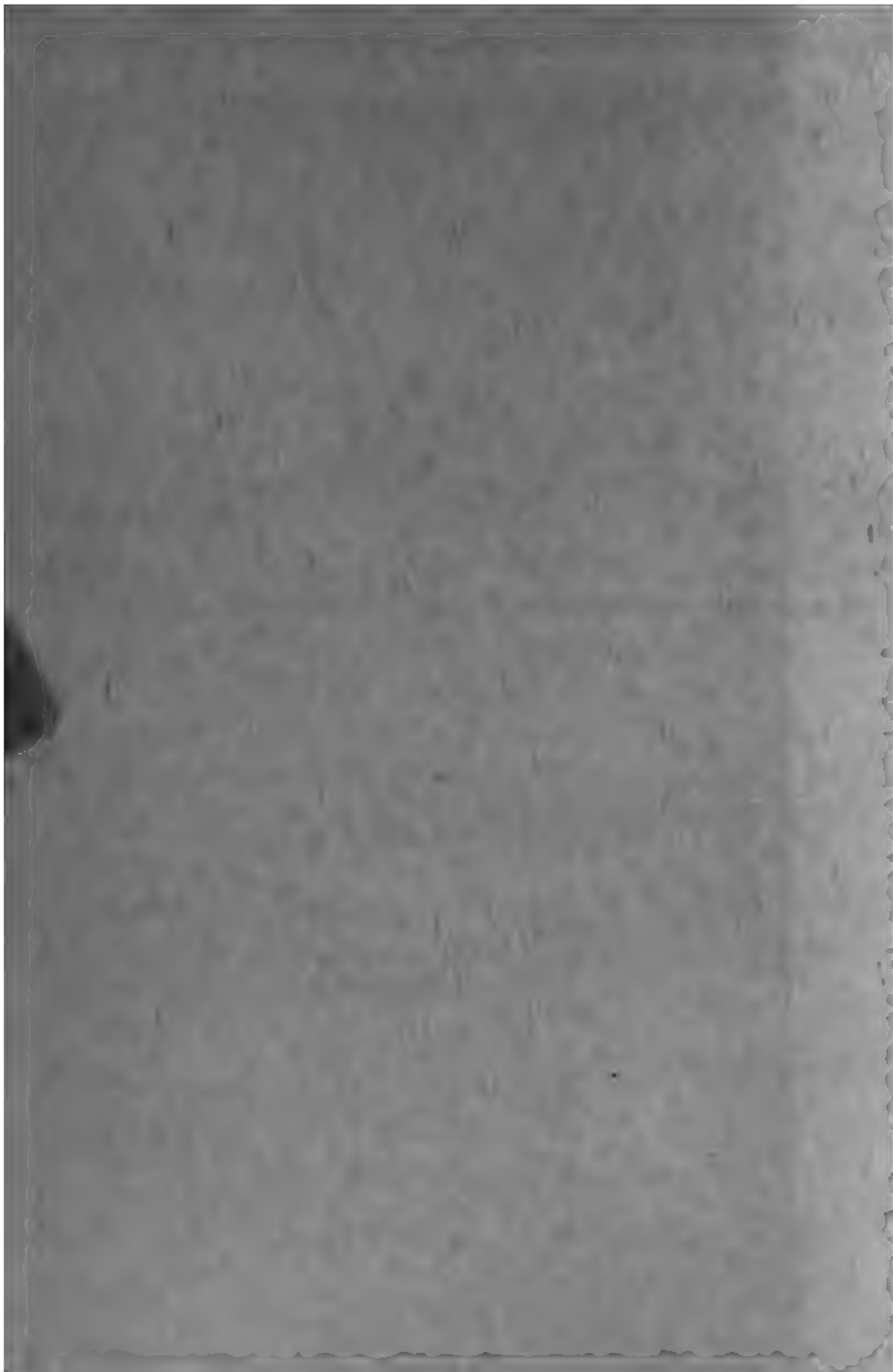
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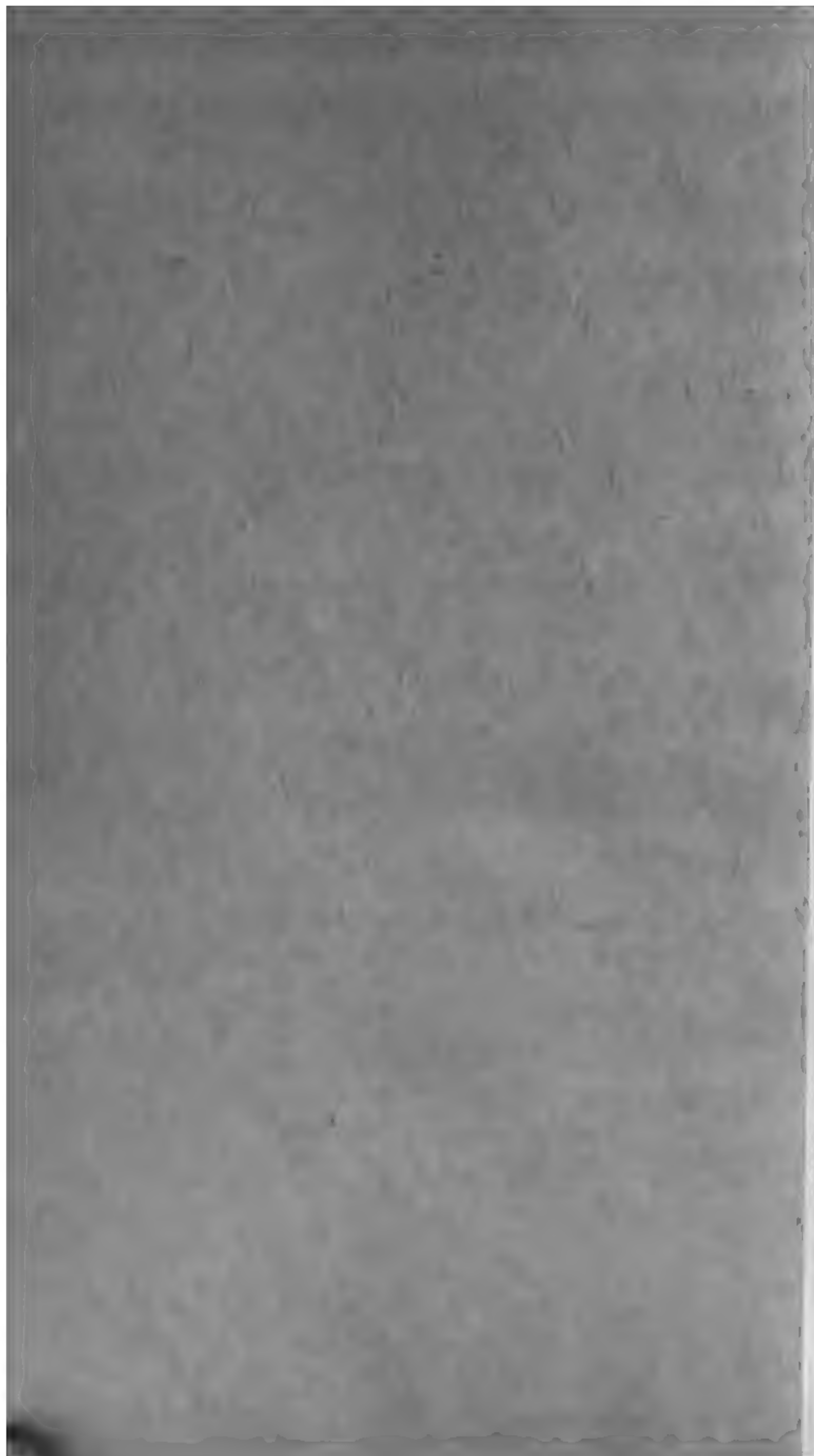


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3

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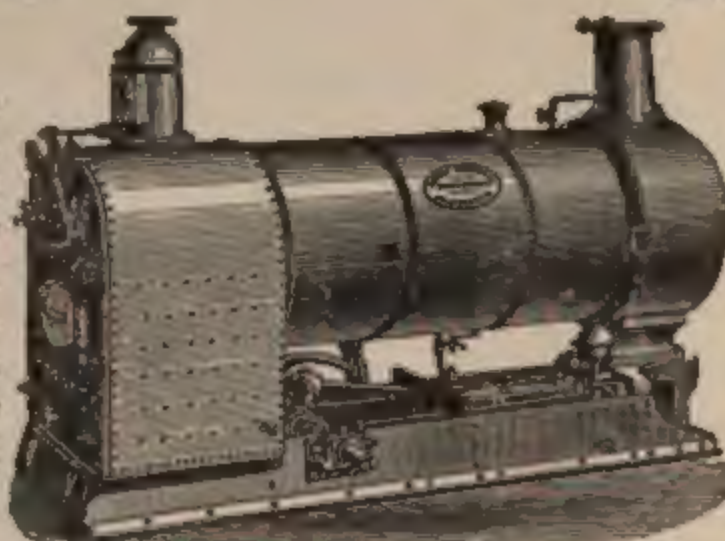
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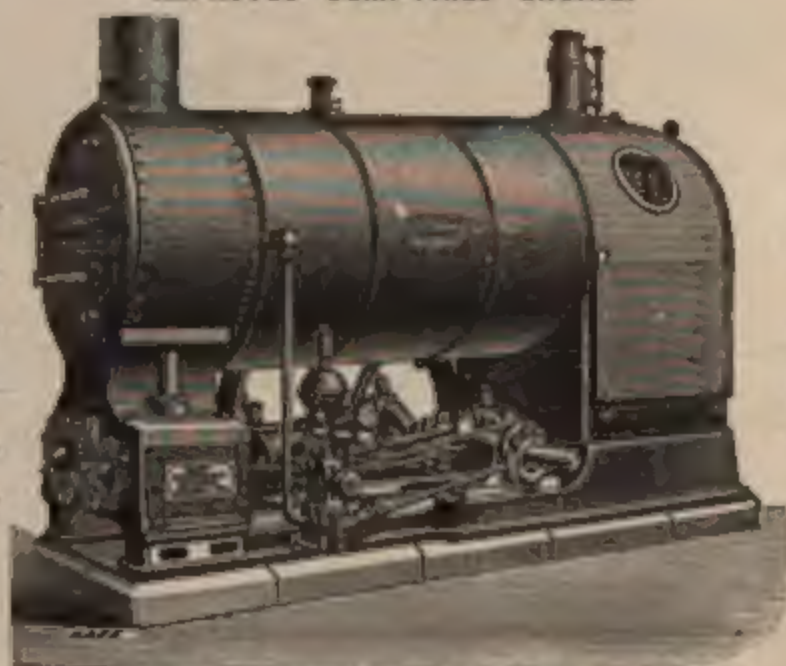


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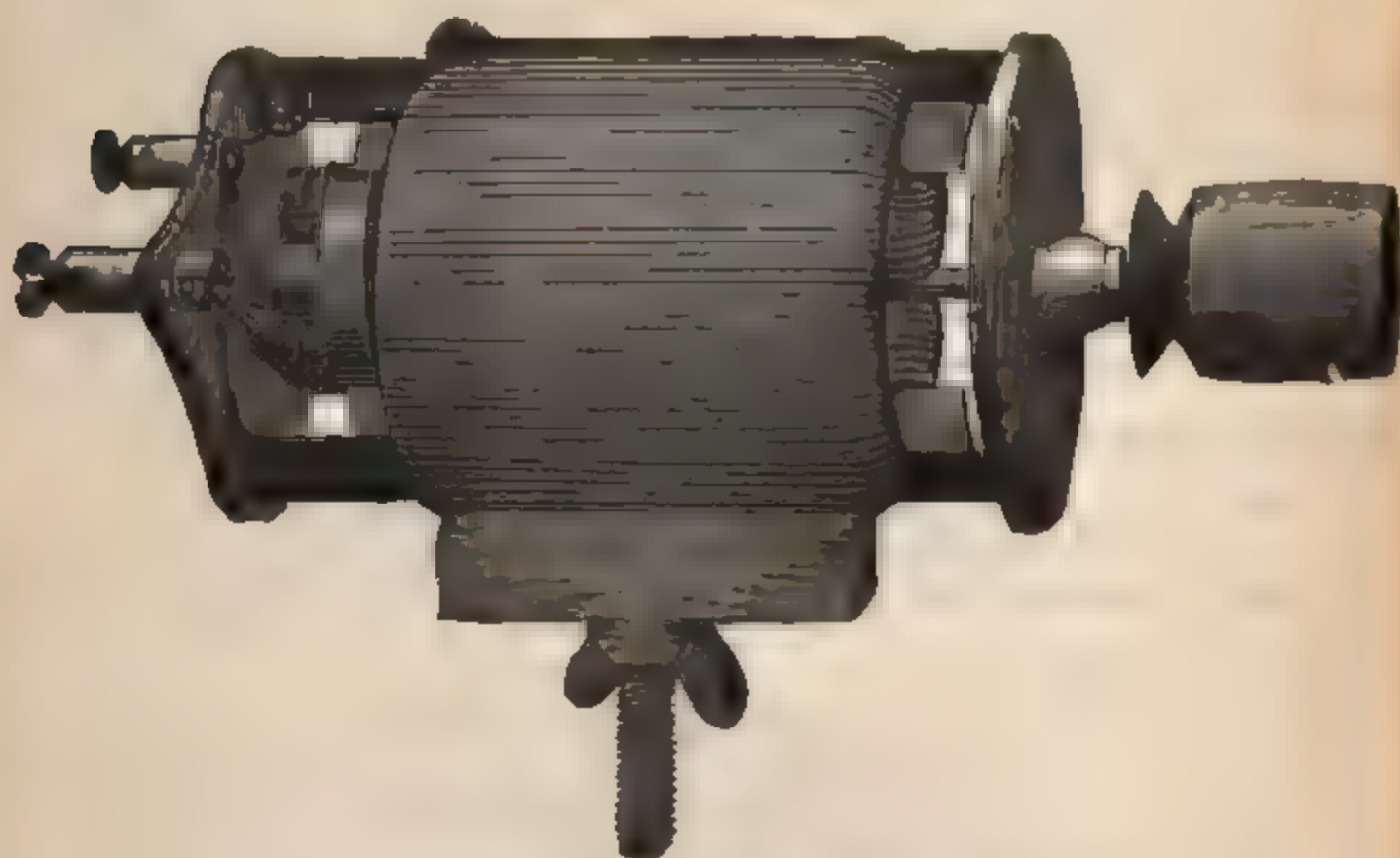




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## REMARKS ON THE PAST YEAR.

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DURING the year 1883 the Electrical business has been developed in a very remarkable manner, and it is our pleasant duty now to record the steady progress which has marked the advance in its multifarious branches.

The accumulators have rendered very great services, and opened quite a new era in Electric Lighting. Although not such a commercial success as had been anticipated by some, they are extensively used, and have undoubtedly a great future before them. Much remains to be done in order to make them successful, both from an industrial and commercial point of view.

Like the industry of Electric Lighting, it has been the fate of accumulators to be played out by financial philanthropists, who, after getting out of them all that could be expected in this country, are now trying their hands in younger neighbouring states.

We have heard much lately about some public experiments being carried out in Paris with the traction of omnibuses by means of accumulators; but although these were conducted with great flourishes of trumpets, the cautious public have not, we are given to understand, responded so cordially as it was desired, and have stuck to their money. The perfection of these inventions will have to be pushed some steps further, before the position of the amateur-electro-financial gentlemen will improve.

The influx of new Companies has happily been checked, and only a reasonable number of them were promoted during the course of this year. A few of them have proved still-born, and many others not much better.

The great majority of Electrical Companies of all sorts, launched during the Electric mania of 1883, are going rapidly, or have gone, to the wall. The purifying process still continues operating, and one can foresee that the balance of serious, responsible and solvent Electric Lighting Companies, will in a near future not exceed the half dozen, if it even reaches that number.

The amalgamation of the Swan and Edison Electric Lighting Companies is an event worthy of notice, and by it the public has been disappointed of the interesting lawsuit which was threatening for sometime between the two champions of incandescent lighting; but the interested parties have thought better and acted wiser than fighting; they have amalgamated.

The primary batteries have not been neglected for the accumulator or secondary battery. Like the accumulator they have their advocates, some aiming at nothing less than putting the accumulators in the shade and dethroning the dynamo machine altogether.

It is, of course, a pleasant notion to dismiss machinery and motive power altogether, from our calculations, but we are afraid this must remain an unrealised dream.

Chemists and Electricians have, since the appearance of dynamo machines, given up battery power as a cheap means of producing Electricity, and many inventors, who are neither one nor the other, would do well to bear the fact in mind.

The lighting of the beautiful establishment of the Comptoir d'Escompte of Paris to which we referred last year has been discontinued. It was conducted by means of primary batteries, and they have proved too troublesome and expensive.

It was, at the time, very noisily advertised by the advocates of primary battery power as the *ne plus ultra* of Electric Lighting installations, dispensing altogether with machinery, belting, foundations, &c., and was so far successful until the time came to reckon the cost of production and the trouble which it entails.

Some very good primary batteries have however been brought out, and it may be said that this particular branch of the Electrical science and industry has also received its share of development.

In dynamos it may be said that the quantity has exceeded the quality. Numerous patents have been taken out, and if we omit the Ball unipolar machine, and the Hopkinson improvement of the Edison machine, we may say that nothing of interest has disturbed the state of things existing in 1882.

The greatest display of Electric Lighting perhaps ever seen, took place, curious to say, at an Exhibition in which the light was only called as an auxiliary, viz., the Great International Fisheries' Exhibition, held at South Kensington, London.

All the varieties of arc and incandescent lamps and dynamo machines were put into requisition, and the lighting contributed in a great proportion to the success of the Exhibition, which was immense and well deserved. A sight which is not to be forgotten by those who have seen it, was the illumination of the great Hall, 100 feet long, holding the British Exhibits, and which was lighted by means of 1,200 incandescent lamps regularly spread over the entire surface of the walls and the roof.

The boiler and engine power, amounting to over 11,000 indicated H.P., was supplied by Messrs. Davey, Paxman & Co., and did good service.

Great attention has been, and is being, paid by the various makers of steam engines in turning out some first-class engines for the steady driving of dynamo machines. Direct driving is coming into favour in some special cases, and especially on board ship, where space is a consideration.

Numerous compact direct acting engines have been brought out, and amongst them one could be seen at the last Engineering and Metal Trades' Exhibition, held at the Agricultural Hall, which was about the size of a chimney-pot hat, and could work direct an Hopkinson-Edison dynamo of 200 Edison 16-candle lights. This machine was on the rotary principle, weighed 100 lbs., and worked at 1,000 revolutions per minute, with a pressure of steam of 75 lbs. to the square inch. It is said to be very efficient. But although these machines may answer their purpose very well in some particular instances, we doubt very much that they would prove economical for general use, both as regards to the wear and tear and the consumption of fuel. The "Otto" gas engine continues to be in great favour for driving dynamos, and renders innumerable services wherever opportunities occur to have recourse to it.

The year 1884 will see the end of the Gramme original patent for dynamo machines, and although it is said that the Company manufacturing it in this country intends applying for a prolongation of the patent, we fail to see on what ground they



can expect to be successful. According to the Patent Law, the extension of the terms of patents is intended for the benefit of inventors who have been inadequately remunerated by their patent; and the inventor, to our knowledge, has sold his rights and received his own price for his patent, and the same has been re-sold to other purchasers before it finally reached the hands of the present Company.

Should this patent lapse, as it will in the ordinary course of things, a great stimulus in the manufacture of dynamo machines will be the result.

Of Electric Lighting there is not much to be said beyond that this industry is now pursuing its natural and gradual development.

The days of sensational demonstration are over, the public being now well educated to the new illuminant.

Serious work is now undertaken and carried out quietly and successfully by a few of the responsible firms who have survived the crisis, and the lighting of the great ocean steamships is proving a very remunerative business. All first-class vessels are being systematically lighted, and the majority of the large buildings and hotels recently erected, have adopted the Electric Light. Factories, store-rooms, theatres, &c., are following in their wake. The work preparatory to the lighting of public thoroughfares and private houses from centres of distribution is in a fair way of progress, and we hope to be able to record in our next issue the successful working of one or more such systems.

The inventors keep pace with progress: numerous patents for every detail of apparatus used for lighting by arc and incandescence are being daily taken out; in fact the Electrician proves one of the best customers of the Patent Office.

The minute incandescent lamp is becoming very popular, they are to be seen shining in the head gear of the ballet girls at the Savoy Theatre in "Iolanthe," and at the Grand Opéra of Paris in "La Farandole." Some smaller ones are now even worn at the button hole, and as luminous jewels, such as hair and scarf pins, &c. It is a remarkable thing that the Electric Light can be produced of any power between the 100,000 candle light exhibited in the tropical department of the Crystal Palace Electrical Exhibition in 1882, and the small surgical incandescent lamp used for throat diseases, the size of which does not exceed that of a very small green pea. The small incandescent lamp is also proving of great value to the microscopist, such lamps being now used by them in the place of the oil lamp used heretofore.

The Electrical transmission of power continues to attract a great deal of attention. M. Marcel Deprez, in France, has continued the experiments which he began at the Paris Electrical Exhibition in 1881, and illustrated at the Munich Electrical Exhibition the following year, as described in our last issue.

His next demonstrations took place at the terminus of the Northern Railway Company, in Paris, and at Grenoble, a town in the South East of France. The experiments at the Gare du Nord are going to be repeated on a much larger scale, the immense resources of this Company having been placed at M. Deprez's disposal. The experiments will take place with the power of 200 H.P. obtained from a locomotive, and the telegraph line of the Railway Company will be made available. Baron de Rothschild, the largest proprietor of shares in the above-named Company, has taken much interest in the inventions of M. Deprez, and is said to have placed at his disposal a sum of £40,000 to be spent in purely experimental work in order to prove the merits of



the inventions. At Grenoble the power was received from a dynamo driven by a turbine situate at a waterfall in the village of Vizille, distant about nine miles. A complete circuit of two wires of silicious bronze, two millimètres in diameter and of a total resistance of 167 ohms connected the producing and receiving machines, and some careful observations, culminating in a very interesting report, were made by a committee of learned gentlemen appointed at the instance of the Mayor of the town of Grenoble.

Some further experiments, consisting in the distribution to various machine tools, printing presses, &c., in various parts of the town, from a dynamo actuated by a steam engine in the town of Grenoble, were indulged in, and the good people of Grenoble were so excited with the result, that they actually illuminated the town at night in honour of M. Deprez. Much more modest, but no less interesting, were the experiments carried out in our midst by a French inventor of the name of Gaulard, who, with the permission of the Metropolitan District Railway Company, has laid through their tunnels a primary circuit of 15 miles of insulated wire, four millimètres in diameter, and established a central distributing station at Edgware Road Station, and four auxiliary stations at Gower Street, King's Cross, Notting Hill Gate and Aldgate, lighting the central, as well as the four last named stations, daily for the past six weeks without single stoppage. This system is called by the inventor secondary generators, and the process consists in establishing, wherever the light is wanted, one of these apparatus composed of 16 vertical columns, about five feet high, and made of cable coiled round a tube of cardboard. The cable itself is composed of primary wire of the same size as the wire of the primary circuit, and surrounded by 48 wires of smaller dimensions, in six series of eight wires; these are the secondary wires, and their ends are attached to terminals which can be joined in series or parallels by means of a very simple switching arrangement.

The primary current, which is produced by means of an alternating machine, induces some secondary currents in the columns of the secondary generators, and these, by being used either separately or in groups, are made to answer whatever purpose may be desired, according to the system of light intended to be used.

The secondary currents are, moreover, influenced by means of an arrangement similar to the one adopted in the medical coil, and which allows more or less of the bundle of soft iron wire constituting the core to be exposed to the action of the current.

The lights are thus distributed:—

Edgware Road Station—30 Swan lamps 20 candle-power and 3 Swan lamps 40 candle-power, using 12 columns and 2 Jablochkoff lights on 4 columns.

Gower Street—24 Swan lamps 20 candle-power on 8 columns.

King's Cross—22 Swan lamps 20 candle-power on 8 columns, and 2 Jablochkoff lights on 4 columns. Total, 12 columns used.

Notting Hill Gate—20 Swan lamps 20 candle-power on 8 columns, and Jablochkoff on 2 columns.

Aldgate—34 Swan lamps 20 candle-power on 12 columns, and 1 Jablochkoff on 2 columns.

The primary current employed has an electromotive force of 2,000 volts, and an intensity of 10 ampères; and it is a curious fact that, notwithstanding the excessive potential above-named, no risk of danger exists, as the primary circuit is always closed metallically. M. Gaulard illustrates the fact by taking hold with his hands of the terminals of any of his secondary generators.

A demonstration of this system on a much larger scale is contemplated, and we hope that it will be our duty to report it in our next issue.

The Electric traction or propulsion is effected in two ways—by driving from a fixed dynamo a moveable one placed on the vehicle, and electrically connected with it by means of a metallic conductor, as is the case with many of the Electric railways in existence; and also by working a moveable dynamo fixed to a vehicle by means of secondary or primary batteries also carried with the vehicle, such as is the case in electrical omnibuses and electrical launches. Of the former we already have a certain number, and are threatened with more.

Besides the Waterloo and Charing Cross Electric Railway, for which an Act of Parliament was obtained last year, as reported in our last issue, and the construction of which has remained in abeyance, two Companies are now petitioning Parliament for the obtaining of powers for constructing two new lines of underground electric railways. One of these lines, which is to be called the Mid-London Electric Railway, is intended to connect the west end of Oxford Street to the Royal Exchange; the other, the London Central Electric Railway, will run from Regent Circus to the Post-office, *via* Charing Cross.

An Electric tramway was inaugurated by the Lord-Lieutenant of Ireland on the 28th of September last, at Portrush, on the north-east coast of Ireland. The line is nearly six miles long, and runs between the last named town and Bush Mills; and a further extension of it is contemplated.

The motive power, pending the completion of the turbines, which are in course of erection, is a 20 H.P. steam engine, but when the work is complete there will be three turbines of 40 H.P. each, or a total of 120 H.P., worked by the waterfall at Bush Mills.

The construction of another Electric tramway, also in Ireland, was undertaken in September last; this will run between Newry and Bessbrook.

An experimental Electric Railway was exhibited with great success during last summer on the beach at Brighton, and will probably lead to a work of a more permanent character.

During the last meeting at Wimbledon an Electric Railway conveyed the passengers from the Railway Station to the Common.

In Paris public experiments in driving omnibuses by Electricity have been carried out, and should the scheme prove economical it will be extensively adopted.

The construction of Electric Railways in Vienna has been decided upon.

Germany has a few Electric Railways; and the United States are energetically adopting this mode of propulsion.

Electric launches are also getting into general use.

It will be seen from the above that the transmission of Electrical power is growing very important, and this branch of business will soon take the prominent place which we have from the beginning assumed that it would.

Progress in telegraphy has also taken place during the year, the result being the increase in the working capacity of the existing lines. The Baudot system for rapid telegraphing, which was so much admired at the Paris Exhibition of 1881, is being extensively adopted throughout France; and the latest news from New York bring us the information respecting a new system by means of which 72 messages can be conveyed at a time over one wire.

France is completing her system of underground wires, and has publicly inaugurated, quite recently, the first section of this system, covering the east of France. The section of the north of France is expected to be completed some time in 1884.

The silicious bronze wire, an allusion to which was made in our last issue, is growing into favour. Two lectures delivered by Mr. Preece upon the subject, one in Vienna, the other recently before the Institution of Civil Engineers in London, contributed to making it popular.

An interesting occurrence will take place in the reduction of the tariff for inland telegraphic messages from 1s. to 6d., it will come into operation as soon as the plant required for the contemplated increase of business is ready for use. The installation of the plant and erection of the additional lines required are being pushed forward with great energy.

Submarine telegraphy has not been idle during 1883; many new cables have been laid, and the repairing business has been somewhat brisk.

The laying of a few more Atlantic cables is contemplated; amongst others being those known as the Bennett-Mackay cable and the Hadley cable. The former has, so to speak, become an accomplished fact, since it is actually being manufactured by the firm of Messrs. Siemens Bros., Limited. Its particularity is that it is intended to be used exclusively for the private purposes of Mr. Bennett in relation to his paper, the *New York Herald*. The latter has not as yet come out of the state of project; we have heard much about it, but not of its becoming a fact. Its main features were to be a very low tariff and a system of co-operation amongst its customers.

A cable ship, H.M.S. "Monarch," has been built at Glasgow, at the yard of Messrs. D. J. Dunlop & Co., to the order of the Postmaster-General, and it is intended for the laying and repairing of cables in British waters. Until now the Post Office had to depend upon private enterprise for the maintenance of its cables.

The Telephone business is steadily increasing. Numerous improvements have been made and are being continually made into all its details, and the apparatus is daily gaining in simplicity and sensitiveness. New exchanges are being established in every important town; neighbouring towns are being connected with each other; wealthy individuals are getting their private residences connected with their places of business. The range of the apparatus is being constantly increased, and a distance of 1,000 miles is considered nothing unusual.

From statistical documents it appears that in 1882 there were not less than 303 towns in which telephone exchanges were established, and the subscribers using them numbered not less than 79,000 people. Europe has the largest number of towns, but America has the largest number of subscribers.

An important decision was given in August last by the Examiner of the American Patent Office on the much vexed question of priority in the invention of the telephone, and adjudicated it to Bell. The contest began in March, 1878.

Electric Exhibitions have been and are still the order of the day. 1883 has seen the Vienna Electrical Exhibition, which proved very interesting and a comparative success. Some more exhibitions are announced during 1884 at Rouen, Turin and Philadelphia, this last one will be purely electrical.

The Electrical Societies are sharing their part of the success of the developement of the Electrical industries.

The Society of Telegraph Engineers numbers not less than 1,200 members all told.

A French Society called the "Société Internationale des Electriciens," started in August last, under the auspices of Mr. George Berger, the esteemed President of the Paris Electrical Exhibition, 1881, and under the direct patronage of the Minister of Posts and Telegraphs, M. Cochery, already numbers over 1,200 members, amongst which are about 80 English.

In Belgium a similar Society has been founded, and is negotiating with the French above-named Society with a view of becoming amalgamated with it.

Under the name of "Dynamicables" a social gathering takes place monthly in London, and the numerous subscribers meet at table to enjoy a good dinner, and a sociable evening.

A similar monthly gathering takes place amongst the Paris Electricians.

New Electrical periodicals have also made their appearance in 1883; these are the *Electrical Engineer* and the *Postal, Telegraph and Telephone Gazette*.

A new Patent Law has been promulgated in 1883, which will come into operation on the 1st of January, 1884. Its features are much simpler than those of the old law, and the cost of taking out and maintaining patents is considerably reduced, at least as regards the first years of the life of the Patent. Facilities are also afforded as regards payment, which can be effected by instalments instead of in a lump, as before. Altogether, it is to be expected that the patent business will receive a great impetus, and this will no doubt prove a boon to the country in time.

A new wire and plate gauge, promoted by the Standards Department of the Board of Trade, has been approved by an Order in Council, bearing date the 23rd of August, 1883, will become a Board of Trade standard under the Weights and Measures Act, 1878, from the 1st of March, 1884. We give this table elsewhere.

Numerous reports have been made by authorities upon various electrical apparatus and systems; interesting lectures on Electrical subjects have been delivered both before Electrical Societies and other learned and popular audiences; numerous books have been published in different languages bearing upon matters electrical, and we will not attempt to describe or even name them, as their number is growing so rapidly that they are becoming legion. We must refer our readers to the technical publications, in which he will find them described and reviewed at full length.

Schools where Electricity is taught in all its branches have also been started both in the capital and in the provinces, and they are attended by numerous and attentive students.

From the foregoing description of what has been, and is being done in Electrical matters (and we are afraid we have not been able to adequately grasp the subject in so short a review), we can afford to look forward with hope to the future. It will be a great pleasure if we are able, as every year goes by, to record the unexpected progress made by the multifarious applications of that subtle and mysterious agent, Electricity. Before closing this chapter we must pay our tribute to the departed.

1883 has been a year particularly fatal to the Electrical community.

A very short time after we had written our review last year Mr. C. V. Walker, F.R.S., who had been for many years Telegraph Engineer to the South Eastern Railway, died at an advanced age. He was an Electrician of mark, and had been President of the Society of Telegraph Engineers in 1878.



Sir James Carmichael, Bart., died the 7th June. He was the Chairman of that very successful Cable Company, the Submarine Telegraph Company; also of the Mediterranean Extension Telegraph Company; Vice-Chairman of the Electric Sun Lamp Company.

General Sir Edward Sabine, R.A., K.C.B., died the 26th June, at a very advanced age, he had been President of the Royal Society.

William Spottiswoode, F.R.S., President of the Royal Society, died the very day after, the 27th June, being comparatively a young man.

Cromwell Fleetwood Varley, F.R.S., a Vice-President of the Society of Telegraph Engineers, died early in September.

Richard Werdermann, died the 15th of the same month, being only 55 years of age. Werdermann was a clever inventor, and his name is attached to many important discoveries, he did not live to see his inventions succeed.

Alfred Niaudet, the well-known French Electrician and Author, died the 4th October, preceding in the grave by only one month his father-in-law, M. Louis Bréguet, a Member of the Institute and of the Bureau des Longitudes. If we remember that Antoine Bréguet, M. Louis Bréguet's son, died quite a young man in 1882, it will be seen that, with M. Niaudet's, three deaths have occurred in the same family within the scope of two years, and by which France and the world at large have been deprived of three electricians of mark.

Mr. J. Gibbs, an English telegraphist, established and well known in Belgium, died in Brussels on the 2nd November.

Sir William Siemens closes this lugubrious list. He died in November last, in the full vigour of intellect and health of body. His lamented death, which came quite suddenly and unexpectedly, was caused by an accident of a very simple nature. Coming out from a meeting of the Royal Society on the afternoon of the 5th November, he slipped and fell on the pavement in Piccadilly; it was thought to be of so little gravity at the time that Sir William did not even take to his room, but transacted business as usual the following day. A few days after, he was confined to his room, and when least expected, he passed away without any warning to those surrounding him.

J. A. BERLY.

*London, 15th December, 1883.*

TABLES & FORMULÆ.

FORMULÆ OF THE ABSOLUTE UNITS

1.—Fundamental Units.

- L—Length or Space = 1 centimètre.  
T—Time = 1 second.  
M—Mass = 1 gramme.

2.—Derived Mechanical Units.

- (1) Velocity— $V = \frac{L}{T}$   
(2) Force— $F = \frac{LM}{T^2}$   
(3) Work— $W = \frac{L^2 M}{T^2}$

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3.—Derived Magnetic Units.

- Strength of the Pole of a Magnet .. ..  $m = L^{\frac{3}{2}} T^{-1} M^{\frac{1}{2}}$   
Moment of a Magnet .. ..  $m l = L^{\frac{5}{2}} T^{-1} M^{\frac{1}{2}}$   
Intensity of a Magnetic Field .. ..  $H = L^{-\frac{1}{2}} T^{-1} M^{\frac{1}{2}}$

4.—Electro-Magnetic System of Units.

- Quantity of Electricity .. ..  $Q = L^{\frac{1}{2}} \times M^{\frac{1}{2}}$   
Strength of Electric Current .. ..  $C = L^{\frac{1}{2}} T^{-1} M^{\frac{1}{2}}$   
Electro-Motive Force .. ..  $E = L^{\frac{3}{2}} T^{-2} M^{\frac{1}{2}}$   
Resistance of Conductor .. ..  $R = L.T^{-1}$

5.—Electrostatic System of Units.

- Quantity of Electricity .. ..  $q = L^{\frac{3}{2}} T^{-1} M^{\frac{1}{2}} = v Q$   
Strength of Electric Current .. ..  $c = L^{\frac{3}{2}} T^{-2} M^{\frac{1}{2}} = v C$   
Electro-motive Force .. ..  $E = L^{\frac{1}{2}} T^{-1} M^{\frac{1}{2}} = \frac{E}{v}$   
Resistance of Conductor .. ..  $R = L^{-1} T = \frac{R}{v^2}$

$v = 310\cdot740\cdot000$  mètres, per second approximatively, the ratio of the Electro-static the Electro-magnetic Unit of Quantity.

UNIT OF FORCE is the force which would produce, in a body weighing one velocity of one centimètre per second. Calling gravitation the natural force, the absolute unit of force will be  $\frac{1}{980}$ th part of it, or  $\frac{1}{980}$  of acted upon by the earth's attraction, or the weight of  $\frac{1}{980}$  gramme.

UNIT OF MECHANICAL EFFECT is the unit of force carried up through one or  $\frac{1}{980}$  raised one centimètre.

UNIT OF MECHANICAL PERFORMANCE is the unit of mechanical effect or work in the unit of time, or  $\frac{1}{980}$  gramme raised one centimètre in one second.

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## ELECTRICAL UNITS OF MEASUREMENT.

(*British Association and Congrès International des Electriciens, Paris, 1881.*)

1.—RESISTANCE.—The Ohm is equal to  $10^9$  absolute electro-magnetic units, resistance of a prism of pure mercury 1 square millimètre section a mètres long, at 0° cent. It is represented by a length of about 400 French telegraphic wire (4 millimètres). The Megohm used in insulations is equal to a million Ohms, or  $10^9$  absolute electro-magnetic units. The Microhm is equal to one-millionth part of an Ohm, or  $10^{-9}$  absolute electro-magnetic units.

2.—ELECTROMOTIVE FORCE.—The Volt is equal to  $10^8$  absolute electro-magnetic units, or about equivalent to 0.9268 times the electro-motive force of a Daniell element.

A Megavolt = 1,000,000 Volts.

A Microvolt =  $\frac{1}{1,000,000}$  Volt.

3.—CURRENT.—The Unit of Current is equivalent to an Ampère per second. Current having an electro-motive force of one Volt and a resistance of one Ohm gives one Ampère.

4.—QUANTITY.—The Unit of Quantity, the Coulomb, is defined by the condition that a current of one Ampère gives one Coulomb per second.

5.—CAPACITY.—The Farad is the capacity defined by the condition that a Condenser of one Farad gives one volt.

All these units have their megas and micros (1,000,000 and  $\frac{1}{1,000,000}$ ).

NAME	ADDRESS	PHONE
3940	329432	28576
493	264191	22917
5051	217976	18908
74252	165578	14363
57538	112639	10963
02175	095106	08250
09275	077514	067236
25871	061718	053536
32585	04405	038210
70879	032383	028073
195915	022475	019495
99195	018787	016296
759401	014384	012477
054377	011467	0099464
658851	0088798	0077025
38748	0073386	0063657
513859	0059443	0051562
479873	0046967	0040740
558677	0035959	0031192
163710	0031006	0026895
139493	0026419	0022917

1 Statute Mile  
 1 Knot or Nautical Mile  
 1 Admiralty Knot  
 1 Statute Mile  
 1 Knot or Nautical Mile  
 1 Admiralty Knot



# **STATE ELECTRICAL DIRECTORY AND ADVERT**

RESISTANCE AND WEIGHT TABLE.

(From "The Electrician.")

The resistances are calculated for pure copper wire.  
The number of feet to the pound is only approximate for insulated wire.

Gauge.	Feet per pound.			Resistance, naked copper.			
	Cotton-covered.	Silk-covered.	Naked.	Ohms per 1,000 ft.	Ohms per mile.	Feet per ohm.	Ohms per pound.
849	..	..	20	·6259	3·3	1600·	·0125
443	..	..	25	·7892	4·1	1272·	·0197
189	..	..	32	·8441	4·4	1185·	·0270
074	..	..	40	1·254	6·4	798·	·0501
081	42	46	50	1·580	8·3	633·	·079
196	55	60	64	1·995	10·4	504·	·127
408	68	75	80	2·504	13·2	400·	·200
707	87	96	101	3·172	16·7	316·	·320
082	110	120	128	4·001	23·	230·	·512
525	140	150	161	5·04	26·	193·	·811
03	175	190	203	6·36	33·	157·	1·29
539	220	240	256	8·25	43·	121·	2·11
196	280	305	324	10·12	53·	99·	3·27
346	360	390	408	12·76	68·	76·5	5·20
535	450	490	514	16·25	85·	61·8	8·35
257	560	615	649	20·30	108·	48·9	13·3
01	715	775	818	25·60	135·	39·0	20·9
79	910	990	1030	32·2	170·	31·0	33·2
594	1165	1265	1300	40·7	214·	24·6	52·9
419	1445	1570	1640	51·3	270·	19·5	84·2
264	1810	1970	2070	64·8	343·	15·4	134·
126	2280	2480	2617	81·6	432·	12·2	213·
002	2805	3050	3287	103·	538·	9·8	338·
393	3605	3920	4144	130·	685·	7·7	539·
795	4535	4930	5227	164·	865·	6·1	856·
708	..	6200	6590	206·	1033·	4·9	1357·
53	..	7830	8330	260·	1389·	3·8	2166·
661	..	9830	10460	328·	1820·	2·9	3521·
6	..	12420	13210	414·	2200·	2·4	5469·

RESISTANCE OF A WIRE 1 MÈTRE LONG, 1 MILLIMÈTRE  
IN DIAMETER.

								Ohms.	Approximate Comparative Resistance.
Silver, annealed	..	..	..	..	..	..	..	0·01937	1
„ hard drawn	..	..	..	..	..	..	..	0·02103	1·09
Copper, annealed	..	..	..	..	..	..	..	0·02057	1·06
„ hard drawn	..	..	..	..	..	..	..	0·02104	1·09
Gold, annealed	..	..	..	..	..	..	..	0·02650	1·38
„ hard drawn	..	..	..	..	..	..	..	0·02697	1·39
Aluminium, annealed	..	..	..	..	..	..	..	0·03751	1·94
Zinc, pressed	..	..	..	..	..	..	..	0·07244	3·75
Platinum, annealed	..	..	..	..	..	..	..	0·1166	6·08
Iron, annealed	..	..	..	..	..	..	..	0·1251	6·80
Nickel, annealed	..	..	..	..	..	..	..	0·1604	8·30
Tin, pressed	..	..	..	..	..	..	..	0·1701	8·80
Lead, pressed	..	..	..	..	..	..	..	0·2527	13·60
Antimony, pressed	..	..	..	..	..	..	..	0·4571	23·65
Bismuth, pressed	..	..	..	..	..	..	..	1·689	87·20
Mercury, liquid	..	..	..	..	..	..	..	1·2247	62·50
Platinum-silver Alloy (2 parts Platinum, 1 part Silver, by weight)								0·3140	16·10
German Silver (commonly used for resistance coils)	..	..						0·2695	14·87
Gold Silver (2 parts Gold, 1 part Silver, by weight)	..	..						0·1399	7·22

WEIGHTS OF IRON WIRE OF DIFFERENT GAUGES.

B.W.G.				lbs. per knot.	B.W.G.				lbs. per knot.
00	..	..	..	2066·68	9	..	..	..	368·0
0	..	..	..	1716·48	10	..	..	..	305·0
1	..	..	..	1393·92	11	..	..	..	241·0
2	..	..	..	1212·20	12	..	..	..	184·0
3	..	..	..	1048·32	13	..	..	..	144·0
4	..	..	..	872·80	14	..	..	..	109·0
5	..	..	..	748·80	15	..	..	..	86·0
6	..	..	..	622·08	16	..	..	..	65·0
7	..	..	..	529·92	17	..	..	..	50·0
8	..	..	..	449·28	18	..	..	..	39·0

NEW LEGAL STANDARD WIRE GAUGE.

From P. ORMISTON & Co.

he equivalents of the New Legal Standard Wire Gauge as annexed will be very useful particularly for the finer sizes, but until this Gauge is better and recognised by the public, we should advise our readers to indicate their measurements in the decimal parts of an inch, the Gauge at present being only hands of the principal manufacturers and fine wire drawers.

Descriptive Number. B.W.G.	Equivalent in parts of an inch.	Differ- ence.	Descriptive Number. B.W.G.	Equivalent in parts of an inch.	Differ- ence.
7/0	0.500	36	No. 23	0.024	2
6/0	0.464	32	24	0.022	2
5/0	0.432	32	25	0.020	2
4/0	0.400	28	26	0.018	1.6
3/0	0.372	24	27	0.0164	1.6
2/0	0.348	24	28	0.0148	1.2
0	0.324	24	29	0.0136	1.2
1	0.300	24	30	0.0124	.8
2	0.276	24	31	0.0116	.8
3	0.252	20	32	0.0108	.8
4	0.232	20	33	0.0100	.8
5	0.212	20	34	0.0092	.8
6	0.192	16	35	0.0084	.8
7	0.176	16	36	0.0076	.8
8	0.160	16	37	0.0068	.8
9	0.144	16	38	0.0060	.8
10	0.128	12	39	0.0052	.4
11	0.116	12	40	0.0048	.4
12	0.104	12	41	0.0044	.4
13	0.092	12	42	0.0040	.4
14	0.080	8	43	0.0036	.4
15	0.072	8	44	0.0032	.4
16	0.064	8	45	0.0028	.4
17	0.056	8	46	0.0024	.4
18	0.048	8	47	0.0020	.4
19	0.040	4	48	0.0016	.4
20	0.036	4	49	0.0012	.2
21	0.032	4	50	0.0010	
22	0.028	4			



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IN THE

## BRITISH ALPHABETICAL SECTION.

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 Botten, John J., electric bell manufacturer, 46, City-road, London, E.C.  
 Cameron, J. & Co., iron and steel manufacturers, 9, Oswald-street, Glasgow.  
 Carlaw, David, speed indicator maker, 54 to 56, Ropework-lane, Glasgow.  
 Clark, F. A. & Son, lead tube makers, Marlborough-wharf, Hammersmith, London, W.  
 Colham & Co., gas engine makers, Stevenage, Herts.  
 Crawford & Bakkarres, Earl of, electrician, 47, Brook-street, London, W.  
 Davis, Langdon & Co., telephone apparatus makers, 110, Cannon-street, London, E.C.  
 Donkin B. & Co., turbine and water wheel makers, Southwark Park-road, London, S.E.  
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 Worthing  
 Faulkner Redford & Co., electricians, 16, Endell-street, London, W.C.  
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 Fisher Hugh D. & Co., spelter manufacturers, 110, Cannon-street, London, E.C.  
 Gordon A. M. C. & Co., lead pipe makers, 57, Bridgewater-street, Liverpool.  
 Graham D. & Co., telegraph contractors, 267, Sauchiehall-street, Glasgow.  
 Hammond & Co., electric light apparatus and fittings manufacturers, Zetland-buildings, Middlesborough.  
 Harrington, G. H., electrician, 42, Spencer-street, Goswell-road, London, E.C.  
 Harding, T. H. & Son, speed indicator makers, Tower Works, Leeds.  
 HARRISON, GILBERT & CO., telegraph engineers, electric bells, fire and burglar alarms, speaking  
 tubes, lightning conductors, &c., 1, St. Swithin's-lane, and 11, Bartholomew-close, London, E.C.  
 Harsard, Tyler & Co., testing machines for wire, &c., 84 & 85, Upper Whitecross-street, London, E.C.  
 Henry & Co., electrician, 98, Borough-road, London, S.E.  
 Hoby & Wilson, metal merchants, Exchange-buildings, Lombard-street, Newcastle.  
 Hux Hargreaves & Co., railway signal manufacturers, Soho Iron Works, Bolton.  
 H. J. & Sons, iron and steel manufacturers, Albion Works, Wolverhampton.  
 Hughes, John & Joseph, metal merchants, Woodstock-street, Birmingham.  
 Hunt Reynolds & Co., electro-plate manufacturers and dealers, Peel-street, Wolverhampton.  
 Lea F. andry Co., railway signal manufacturers, 10, Bush-lane, Cannon-street, London, E.C.  
 Jones, Thomas John, electrician, 12, Princess-street, Hanover-square, London, W.  
 Lewis, Edwin & Son, gas flexible tube makers, Wolverhampton.  
 Locke, Blackett & Co., lead pipe makers, St. Anthony, Newcastle-on-Tyne.  
 Lund, J. A., electrician, 19 and 21, Queen Victoria-street, London, E.C.  
 Macintosh & Co., india rubber and gutta percha manufacturers and dealers, 61, Wilson-street, Finsbury,  
 London, E.C.  
 Meier, C. W. & Co., india rubber and gutta percha manufacturers and dealers, 86, Gracechurch-street,  
 London, E.C.  
 Moriarty & Co., lightning conductor manufacturers, 70, London-street, Greenwich, London, S.E.  
 Muntz Metal Co., metal merchants, 9, Fenchurch-street, London, E.C.  
 Napper Sidney, electrolier manufacturers' agent, 9, Fenchurch-street, London, E.C.  
 Penn, J. & Sons, steam engine and boiler makers, Greenwich, London, S.E.  
 Peet, G., lightning conductor manufacturers, 13, Great George-street, Liverpool.  
 Ramsden, Josselyn & Woods, electrical engineers, Battersea Foundry, Wellington-road, London, S.W.  
 Reddaway, F. & Co., cotton driving band makers, Cheltenham-street, Peniston, Manchester.  
 Richardson, Ellison & Co., electric light apparatus and fittings manufacturers, Works, 243½ High  
 Holborn, London, W.C.  
 Scott, Bros., metal merchants, Royal Insurance-buildings, Queen-street, Newcastle.  
 Sharp, G. W. & Co., telegraph wire manufacturers, 72, King William-street, London, E.C.  
 Stevenson, William & Co., zinc manufacturers, 74 to 80, Brown-street, Glasgow.  
 Sutcliffe, Isherwood, bronzist, 27, Great Hampton-street, Birmingham.  
 Tash Henry, zinc manufacturers, 197, 199, 201, Buchanan-street, Glasgow.  
 Tynbø, E., battery manufacturer, 18, Malvern villas, Willalton, N.W.  
 Vivian & Sons, lead merchants, 4, Crooked-lane, Liverpool, and Whitelock Lead Works, Swansea.  
 Watson, Henry, electric light engineers, 39, High Bridge, Newcastle.  
 West, H. J. & Co., electric light apparatus and fittings manufacturers, 116 and 118, Southwark Bridge-  
 road, London, S.E.  
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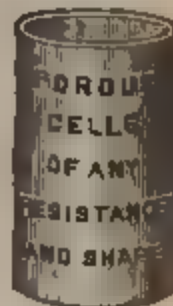


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Dalo R. F. & Co.	..	..	..	..	..	..	..	..	..	..	..
Davey, Paxman & Co.	..	..	..	..	..	..	..	..	..	(Page opposite title	
Davis & Timmins	..	..	..	..	..	..	..	..	..	..	..
Day, Davies & Hunt	..	..	..	..	..	..	..	..	..	..	..
Defries J. & Sons	..	..	..	..	..	..	..	..	..	..	..
De La Rue, Thomas & Co.	..	..	..	..	..	..	..	..	..	..	..
Dennis W. F. & Co. (Felten & Guillaume)	..	..	..	..	..	..	..	..	..	..	x
Dudgeon Richard	..	..	..	..	..	..	..	..	..	..	..
Duncan Brothers	..	..	..	..	..	..	..	..	..	..	..

E.

Edmunds, Henry (Hochhausen System of Electric Lighting)	..	..	..	..	..	..	..	..	..	..	..
Eidsforth & Mudford	..	..	..	..	..	..	..	..	..	..	..
Electro Dynamic Co. of Philadelphia (C. R. Heap, British agent)	..	..	..	..	..	..	..	..	..	..	..
Electric Light Carbon Co.	..	..	..	..	..	..	..	..	..	..	..
Electric Lighting Supply & Fitting Co., Limited	..	..	..	..	..	..	..	..	..	..	..
Electric & Magnetic Appliance Stores (J. Hintze, manager)	..	..	..	..	..	..	..	..	..	..	..

F.

Faraday & Son	..	..	..	..	..	..	..	..	..	..	..
Felten & Guillaume (W. F. Dennis & Co., agents)	..	..	..	..	..	..	..	..	..	..	x
Foxcroft, W. M.	..	..	..	..	..	..	..	..	..	..	..
Franks, Robinson & Co.	..	..	..	..	..	..	..	..	..	..	..

G.

Garnham & Co.	..	..	..	..	..	..	..	..	..	..	..
Garsin's Globe Telegraph Code	..	..	..	..	..	..	..	..	..	..	..
Gent, J. T. & Co.	..	..	..	..	..	..	..	..	..	..	..
Glover, W. T. & Co.	..	..	..	..	..	..	..	..	..	..	..
Griffin, C. & Co.	..	..	..	..	..	..	..	..	..	..	..
Griffith & Co.	..	..	..	..	..	..	..	..	..	..	..

H.

Hall, E.	..	..	..	..	..	..	..	..	..	..	..
Harburg India Rubber Comb Co. (F. Winter, agent)	..	..	..	..	..	..	..	..	..	..	xxxviii.
Hardtmuth F. & Co.	..	..	..	..	..	..	..	..	..	..	..
Harrison Cox-Walker & Co.	..	..	..	..	..	..	..	..	..	..	..
Heap, C. R. (Electro Dynamic Co. of Philadelphia)	..	..	..	..	..	..	..	..	..	..	..
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Horn & Son	..	..	..	..	..	..	..	..	..	..	..
Houghton, Geo. & Son	..	..	..	..	..	..	..	..	..	..	..

I.

Irvin & Sellers	..	..	..	..	..	..	..	..	..	..	..
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J.

Johnson & Phillips	..	..	..	..	..	..	..	..	..	..	..
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L.

Laing, Wharton & Down	..	..	..	..	..	..	..	..	..	..	..
L'Electricien (agent J. A. Berly, 16, New Bridge-street, E.C.)	..	..	..	..	..	..	..	..	..	..	..
Levy, Armand	..	..	..	..	..	..	..	..	..	..	..
Liepmann Carbon Co.	..	..	..	..	..	..	..	..	..	..	x
Lloyd & Lloyd	..	..	..	..	..	..	..	..	..	..	..
London & Derby Electric Wire Co.	..	..	..	..	..	..	..	..	..	..	..
London Electric Wire Co.	..	..	..	..	..	..	..	..	..	..	..
Low (Sampson) Marston, Scarle & Rivington	..	..	..	..	..	..	..	..	..	..	..

M.

Maling, C. T. (agent, G. G. MacWilliam)	..	..	..	..	..	..	..	..	..	..	..
Marsh & Co.	..	..	..	..	..	..	..	..	..	..	..
Marshall, Sons & Co., Limited	..	..	..	..	..	..	..	..	..	..	..
Martin, A.	..	..	..	..	..	..	..	..	..	..	..
Messer & Thorpe	..	..	..	..	..	..	..	..	..	..	..
Moffatt, Alex. & Co.	..	..	..	..	..	..	..	..	..	..	..
Morgan, Robert & Son	..	..	..	..	..	..	..	..	..	..	..
Mosses & Mitchell	..	..	..	..	..	..	..	..	..	..	..

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- Bennett, C., electrician, Woodlands-road, Redhill.
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 Crookes, William, consulting electrical engineer, 7, Kensington-park-gardens, London, W.  
 Cross, Charles Samuel, analytical chemist, 806, Old Ford-road, Bow, London, E.  
 CROSSLEY BROS., gas engine ("Otto") manufacturers, Manchester. London Office: -24, Portico, E.C.; Glasgow Office: -193 Sauchiehall-street. *See covers of book.*  
 Crossley & Co., metal merchants, 53, Gracechurch-street, London, E.C.  
 Crossley Telephone Co., Albany-buildings, Bradford, Yorks.  
 Crossley Telephone Company, 18, Austinfriars, London, E.C.  
 Crossley, George, pulley maker, Albion Machine Works, Cleckheaton, Yorkshire.  
 Crouch, Henry, optician, 66, Barbican, London, E.C.  
 Crown Zinc Company, spelter manufacturers, Swansea.  
 Cruikshank, G. M., patent agent and consulting engineer, 135, Buchanan-street, Glasgow.  
 Cruikshank, Richard, manufacturing chemist, 121 and 123, Camden-street, Birmingham.  
 Crystal Porcelain Pottery Company, Limited, electrical insulator manufacturers, 23, St. Swithun's-lane, London, E.C. Works, Cobridge, Stoke-on-Trent. *See index to advertisers.*  
 Cuba Submarine Telegraph Co., Limited, 61, Old Broad-street, London, E.C.  
 Cubley & Preston, manufacturing chemists and electrical instrument makers, 4, High-street, Sheffield.  
 CUMMING & BRINKERHOFF, American agents for J. A. Berly's Universal Electrical Directory, price \$3, Meyer's & Gurn's Telegraphic Cipher Code Books, &c. We do a general commission business as we purchase anything in the market for foreign or domestic use, 219, East 18th-street, New York, U.S.A. *See index to advertisers.*  
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 Curtis, John S., model maker, 13, Thornton-lane, Leicester.  
 CUTTING, R. C. & CO., lightning conductor manufacturers, electric bell and telephone fitters, Waterloo-chambers, Queen Victoria-street, London, E.C.  
 Cuttriss & Co., electrical instrument makers, 72, New Briggate, Leeds.

## D.

- Dale, H. & E. J., manufacturing electricians, electric alarm, bells, lamps (arc and incandescent), telephone apparatus manufacturers, 26, Ludgate-hill, and 4, Little Britain, London, E.C. *See index to advertisers.*  
 Dale, R. F., & Co., brass and copper founders, Bear-lane, Southwark, London, S.E. *See index to advertisers.*  
 Danson, T. J., & Co., patent agents, 3, St. Nicholas-buildings, Newcastle-on-Tyne.  
 DARLOW & CO., magnetic curative appliances manufacturers, 443, Strand, London, W.C.  
 Darton, F., & Co., electrical instrument makers, 45, St. John-street, London, E.C.  
 Darwin, J. M., electrician, Brook-street, Longton, Staffordshire.  
 Daubuz & Co., tin merchants, 40 and 41, Upper Thames-street, London, E.C.  
 DAVEY, PAXMAN & CO., makers of high speed engines for electrical purposes, electrical light, mechanical-engineers, The Standard Iron Works, Colchester, Essex. *See index to advertisers.*  
 Davidson, Alex., electrician, 47, London-street, Glasgow.  
 Davies Bros. & Co., galvanisers, 110, Cannon-street, London, E.C.  
 Davies & Co., reflector and shade manufacturers, 34, Warwick-lane, Newgate-street, London, E.C.  
 Davies, E., galvanized iron wire manufacturer, Galvanized Iron Works, Cannock-road, Wolverhampton.  
 Davis, J., & Co., telegraph engineers and contractors, 51, Tyrell-street, Bradford.  
 Davis, J., & Son, telegraph works, and telephone contractors, All Saints' Works, Derby.  
 Davis, Moses & Co., electrolier, lamp and lustre manufacturers, 27, Wellclose-square, London, E.  
 Davis, R., & Son, steam packing manufacturers, 17 and 19, Fleming-square, Blackburn.  
 Davis & Timmins, manufacturers of electric light fittings, telegraph wire, and screw makers, Bow-lane, London, E.C. *See index to advertisers.*  
 DAVIS, FREDERICK, electrical engineer, Palace-chambers, 9, Bridge-street, Westminster, London, S.W.  
 Davis, G. F., electric bell manufacturer, 185, Vauxhall-bridge-road, London, S.W.  
 Dawkins, A. & Orton, wire manufacturers, 9, New Broad-street, London, E.C.  
 DAY, DAVIS & HUNT, patents, trade marks, and registration agents, 321, High Holborn, London, W.C. *See index to advertisers.*

- ay, Edward, assayer, 28, Warstone-lane, Birmingham.
- acon, Parker, & Co., steam engine and boiler makers (electrical purposes), Sandon Works, Salford, Manchester.
- an, J., & Co., manufacturing chemists, Brickhouse-lane, Great Bridge, West Bromwich.
- an, T., telegraph cable machine manufacturer, East Surrey Foundry, Pitlake, Croydon.
- arlove & Doad, lightning conductor manufacturers, Hope Iron Works, Trinity-lane, York.
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- ampster, Moore, & Co., steam engine indicator, vacuum and hydraulic gauge makers, 49, Robertson-street, Glasgow.
- 'Humy, P.R.F., electric light engineer, 21, Litchfield-street, Soho, London, W.
- e La Rue, T. & Co., publishers of electrical and scientific works, Bunhill-row, London, E.C. *See index to advertisers.*
- e Negri, Constantine, model maker, 8, Stamford-street, Blackfriars-road, London, S.E.
- ennis Brothers, & Co., metal merchants, 24, Martin's-lane, London, E.C.
- ennis, W. F., & Co., wire drawers, 101, Leadenhall-street, London, E.C.
- enny, Robert, electric bell fitter, 131, Oxford-street, Glasgow.
- ent, E., & Co., makers of non-magnetizable watches, 61, Strand, London, W.C.
- erby Crown Porcelain Co., Limited, earthenware manufacturers, 27, Ely-place, London, E.C.
- ESMOUTIS, H. F., LE BRUN & CO., platinum refiners & metal merchants, 8, Southampton-street, Strand, London, W.C.
- eville & Co., lighthouse engineers, 23, New-street-square, Shoe-lane, London, E.C.
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- ibley, Geo., & Son, metal merchants, 11, Queen Victoria-street, London, E.C.
- ickinson, Arthur J., sulphate of ammonia manufacturer, Surrey Canal, Deptford, London, S.E.
- ickson & Co., india rubber and gutta percha manufacturers, 33 to 35, Lowgate, Hull.
- ickson & Head, glass benders, 79, St. George-street, East Smithfield, London, E.
- idier, A., electrician, 10, Berkeley-gardens, Camden-hill, Kensington, W.
- ists & Co., electrolier, lamp and lustre manufacturers, St. Paul's-buildings, Carter-lane, Cannon-street, London, E.C.
- Ilwyn & Co., iron wire manufacturers, Cambrian-place, Swansea.
- immack, M., metal merchant, Wolverhampton-street, Bilston, Stafford.
- ingle, Wm. H., electrician, 48, Hindon-street, Pimlico, London, S.W.
- irect Spanish Telegraph Co., Limited, Leadenhall-buildings, Leadenhall-street, London, E.C.
- irect United States Cable Co., Limited, General offices, 52, Old Broad-street, London, E.C.
- ixon, Corbitt & Spencer, lighting conductor manufacturers, 26, Commercial-road, London, E. and Thames, Gateshead.
- ixon & Brooks, asbestos merchants, 48, London-street, Fenchurch-street, London, E.C.
- ixon, S., & Son, lightning conductor manufacturers, 49, Swinegate, Leeds.
- ixon, J., & Co., telegraph wire manufacturers, Windsor Iron Works, Speakland-street, Liverpool.
- obb, J. T., manganese merchant, 68, West Bar-street, Sheffield.
- obson, J. W., brassfounder, Baker-street, Hull.
- olge, Alfred, felt maker, 132, Queen Victoria-street, London, E.C.
- onkin & Vecqueray, electrical engineers, 14, Tabernacle-walk, London, E.C.
- ooley, T. C., earthenware manufacturer for electrical purposes, Woodville, Burton-on-Trent.
- orrington, A. R., & Co., electrotipers, 8, Stanhope-street, Newcastle-street, Strand, London, W.C.
- orset, W., railway signal manufacturer, High-street, Epsom, Surrey.
- oulton & Co. (late Pinder, Bourne & Co.), manufacturers of all kinds of earthenware telegraphic appliances, Holborn-circus, London, E.C., and Burslem, Staffordshire.
- oulton & Watts, insulator manufacturers, Lambeth Pottery, London, S.E.; and Burslem, Staffordshire.
- MOULTON, HENRY, & CO., 28, High-street, Lambeth, London, S.E., drain pipe manufacturers, Granville-wharf, Granville-street, Birmingham. Also Rowley Regis, Staffordshire; chief office, Lambeth Pottery, London, S.E.
- ove, J., & Co., lighthouse engineers, 18, Greenside-lane, Edinburgh.
- owning, Geo., & Co., patent agents, 8, Quality-court, Chancery-lane, London, W.C.
- owns, T., & Son, electrical instrument makers, 192, Bethnal-green-road, London, E.
- rake, George, lightning conductor manufacturer, Princeville-street, Legram's, Bradford.
- rew & Cadman, air tight glass case makers, 245 and 246, High Holborn, London, W.C.
- ring & Fage, electrical instrument makers, 145, Strand, London, W.C.
- RIVER, GEORGE, telegraph engineer and lightning conductor manufacturer, 27, Warren-street, Euston-road, London, W.
- uchampa, E., electric light engineer, 14, Croxted-lane, West Dulwich, London, S.E.
- uckering, C., lamp post manufacturer, Rosemary-lane, Lincoln.



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 Dudgeon, Richard, hydraulic jacks, tube expanders, steam hammers, 114 Fenchurch-street, London, E.C. *See index to advertisements*  
 Duncan Bros., engineers and contractors, 32, Queen Victoria-street, London, E.C. *See index to advertisements*  
 Duncan, Watson & Co., oil merchants and grease manufacturers, Dashwood House, New Broad-street, London, E.C.  
 Dunn, Garwood & Humble, wire rope manufacturers, Byker Ropery, Newcastle-on-Tyne.  
 Dunn, A. S., Telegraph Department, Caledonian Railway Company, Glasgow.  
 Duprè, Auguste, P.H.D., F.R.S., F.C.S., analytical chemist, 17, Pembroke-gardens, Kensington, London, W.  
 Durham, George, electrical engineer, 8, Victoria-street, Shaw-heath, Stockport.  
 Dusseldorfer, Eisen & Draht-Industrie, wire drawers, 6, Lime-street, London, E.C.  
 Dyer, Bernard, F.C.S., F.I.C., analytical chemist, 17, Great Tower-street, London, E.C.

## E.

- Eades, W., Son & Co., pulley makers Eades' patent, Westminster Works, Montgomery-st., Sparkhill, Birmingham.  
 Eagle Galvanizing & Tin Coating Co., galvanizers, 46, Tower-chambers, Finsbury-pavement, London, E.C.  
 Earl & Philip, electrother manufacturers, 113, London Wall, London, E.C.  
 Earp, Wm. R., & Co., ammonia manufacturers, Hutton-road, Runcorn.  
 East London Galvanizing & Metal Company, 31, Lombard-street, London, E.C.  
 East London Rubber Co., india rubber manufacturers, 3, Great Eastern-street, London, E.C.  
 Easterbrook, Hannaford & Co., railway signal manufacturers, 4, Queen Ann's-gate, London, S.W.  
 Eastern Electric Light and Power Company, Limited, 19, Great Winchester-street, London, E.C.  
 Eastern Extension Australasia & China Telegraph Co., Limited, 65, Old Broad-st., London, E.C.  
 Eastern & South African Telegraph Co., 66, Old Broad-street, London, E.C.  
 Eastern Telegraph Company, Limited, 66, Old Broad-street, London, E.C.  
 Easton & Anderson, steam engine makers, 3, Whitehall-place S.W., and Erith Iron Works, Erith.  
 Economic Electric Co., Limited, electric light contractors, 9, Soho-square, London, W.  
 Economic Electric Company, Limited, manufacturing electricians, Economic Works, Durham-strand, London, W.C.  
 Economical Electric Supply Association, medical coils and bichromate of potash makers, Clarendon Wood Green, London, N.  
 Edleston, Williams, & Co., telegraph wire mfrs., New Hall Works, George-street-parade, Birmingham.  
 Edger, A. J. M., analytical chemist, 13, Dean-street, Newcastle.  
 Edinburgh & Birmingham Brass Foundry Company, electric bell manufacturers, 10, St. James'-square, Edinburgh.  
 Edison Electric Light Company, Limited, 19, Victoria-buildings, Manchester.  
 Edison Gower Bell Telephone Company of Europe, Limited, 34, Walbrook, London, E.C.  
 Edison Indran & Colonial Electric Light Company, Limited, electric light contractors, 4 & 6, Throgmorton-avenue, London, E.C.  
 Edison & Swan United Electric Light Co., Limited, 74, Coleman-street, London, E.C.  
 Edmunds, Henry, electrical & consulting engineer, 2, Victoria Mansions, Victoria-street, Westminster, London, S.W. *See last page of advertisements*  
 Edmundson, J., & Co., electric light engineers, 19, Great George-st., London, S.W.  
 Edward, George, & Sons, electric clock makers, 92, Buchanan-street, Glasgow.  
 Edwards & Bradley, india rubber manufacturers, 266, South Lambeth-road, London, S.W.  
 Edwards, C. J., & Sons, leather driving band makers, 32, Great Sutton-st., Clerkenwell, London, E.C.  
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 EIDSFORTH & MIDDLETON, manufacturing and consulting electricians, Electrical Works, Jackman-road, Holloway, London, N. *See index to advertisements*  
 Electric Agency, electrical supply apparatus makers, 20, Great St. Helen's, London, E.C.  
 Electric Apparatus Co., Trafalgar-buildings, Charing-cross, London, S.W.  
 Electric Company, Limited, battery manufacturers, Alhida Electric Works, Adelphi-terrace, London, W.  
 Electric Construction & Maintenance Company, Limited, manufacturing electricians, 23, Queen Victoria-street, London, E.C.  
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- Electric Lighting Contract & Maintenance Co., Limited**, electric light contractors, 1, Queen Victoria-street, London, E.C.
- Electric Lighting Supply & Fitting Company**, electric lamp manufacturers; sole makers of Hedge's patent spark-producing switches, as used by all the leading companies, kept in stock at the Supply Company's Stores. Office and works, 28, York-st., Westminster, London, S.W. *See index to advertisers.*
- Electric & Magnetic Appliance Stores** (J. Hintze, general manager), 21, Liverpool-street, E.C., & Eagle Wharf-road, London, N. *See index to advertisers.*
- Electric Marine Governor Co.**, electrical engineers, 9, Lea-place, East India Dock-road, London, E.
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- Electric Motor Syndicate, Limited**, electric light contractors, 3, Copthall-buildings, London, E.C.
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- Electric Portable Battery & Gas Igniting Co.**, battery manufacturers, 7, Queen Victoria-st., London, E.C.
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- Electric Signal Company, Limited**, electric specialities makers, 7, Bridge-av., Hammersmith, London, W.
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- Electrical Power Storage Company, Limited**, 4, Great Winchester-street, Buildings, London, E.C.
- ELECTRICAL REVIEW and Telegraphic Journal**, H. Alabaster & Co., publishing office, 22, Paternoster-row, London, E.C.
- Electrical Review** (of New York), G. Worthington, editor, T. H. Delano, publisher, 23, Park-row (rooms 14 and 15), New York; agents for Great Britain, Wm. Dawson & Sons, 121, Cannon-st., London, E.C.
- Electrical Trading Co.**, electric light apparatus & fittings manufacturers, 23, Farringdon-st., London, E.C.
- Electrician**, published at 396, Strand, London, W.C.
- Electrician and Electrical Engineer** (of New York), published by Williams & Co., 115, Nassau-street, New York (agents for Great Britain, Wm. Dawson & Sons, 121, Cannon-street, London, E.C.) *See index to advertisers.*
- Electro Amalgamator Co., Limited**, electro metallurgists, Tower-chambers, Moorgate-st., London, E.C.
- Electro-Dynamic Company of Philadelphia**, electro-motor manufacturers (C. R. Heap, general agent), Archway House, Bush-lane, London, E.C. *See index to advertisers.*
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- Electrolytic Company**, electro-platers and electrotypers' plant and material manufacturers, Charles-st., Blackfriars, London, S.E.
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- Elliott, Sir George, & Co.**, lightning conductor manufacturers, West Bute Docks, Cardiff.
- Elliott, Geo., & Co.**, wire rope makers, 28, Great George-street, London, S.W.
- Elliott's Metal Company**, manufacturers of brass, copper wire, &c., Selly Oak Works, Birmingham.
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- Ellis, Edwin**, felt maker, Horney-lane, Neckinger, Bermondsey, London, S.E.
- Ellis, W.**, electrician, Royal Observatory, Greenwich.
- Elmore, W.**, dynamo-magneto and electric machine manufacturer, 91, Blackfriars-road, London, S.E.
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- Emmerton, J.**, glass blower, 13, Kirby-street, Hatton-garden, London, E.C.
- Engert & Rolfe**, felt makers, Barchester-street, Poplar New-town, London, E.
- Englebert & Co.**, lubricant manufacturers, 70, Bishopsgate-street Within, London, E.C.
- Enright, James**, electrician, West Kensington-park, London, S.W.
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- Eichmann Bros. & Walsh**, flexible telephone tube makers, 23, Bartholomew-sq., Old-st., London, E.C.
- Etherington, J.**, lubricator manufacturer, 39A, King William-street, London, E.C.
- European Telephone Company, Limited**, 34, Walbrook, London, E.C.
- Evans, W. & Sons**, galvanizers, Melbourne-street, Wolverhampton.
- Evans, E. M.**, telegraph engineer, 35, Fennell-street, Manchester.
- Evered, R., & Co., Limited**, electrolier manufacturers, &c., 27, Drury-lane, London, W.C. Surrey Works, Smethwick, Birmingham; 253, Argyle-street, Glasgow.
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- Exchange Telegraph Co., Limited**, Bartholomew-house, Bartholomew-lane, London, E.C.
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- Eyre & Spottiswoode**, mathematical instrument makers, Great New-st., Fetter-lane, London, E.C.
- Eyton, A.**, lead pipe manufacturer, 34, James-street, Liverpool.



F.

- Fairbairns, W. & Sons, electro-plate manufacturers and dealers, 65, St. Mary-axe, London, E.C.  
 Fairburn, D., wire drawer, Bank Mill, Mirfield, Yorkshire.  
 Fairburn, D., wire drawer, Sunny Bank, Battyford, Normanton.  
 Faraday & Son, electric apparatus manufacturer, 2, Berners-street, London, W. *See index to advertisers.*  
 Farmer, Robey, Brown & Co., Limited, electrical engineers, Trent Foundry, Gainsborough, and 63, Queen Victoria-street, London, E.C.  
 Farr, Richard, leather driving band maker, 312, King's-road, Chelsea, London, S.W.  
 Faulkner, Alfred, driving band manufacturer, 50, Moor-street, Birmingham.  
 Faulkner, J., electrician, 13, Great Ducie-street, Manchester.  
 Faulkner, R. C., galvanic apparatus dealer, 16, Endell-street, London, W.C.  
 Faure Electric Accumulator Company, Limited, electric light contractors, 71, Queen-street, London, W.  
 Favell, R., & Co., electro-plate manufacturers & dealers, Bucknall-st., New Oxford-st., London, W.  
 Fearnley, D., wire drawer, Robert Town, Liversedge, Yorkshire.  
 Fearn, Francis H. & Co., india rubber manufacturers, Trafalgar Works, Old Kent-road, London, E.  
 Feetham, Mark, & Co., electric bell manufacturers, 9, Clifford-street, London, W.  
 Fell & Wilding, patents & trade marks registration agents, 23, Rood-lane, Fenchurch-st., London, E.  
 Fellows, S. J. & E., galvanizers & galvanized iron wire manufacturers, Vulcan Works, Wolverhampton.  
 FELTEN & GUILLEAUME, manufacturers of wire of all descriptions for electrical and telegraph purposes (W. F. Dennis & Co., agents), 101, Leadenhall-street, London, E.C. *See index to advertisers.*  
 Felting Coal, Iron & Chemical Company, Limited, chemical manufacturers, Royal Insurance-buildings, Newcastle.  
 Felton, T., electrolier manufacturer, Yatea-street, Birmingham.  
 Fenn, W. Thomas, electric bell manufacturer, 5, North-street, Sloane-street, London, S.W.  
 Fenner, J. H. & Co., driving band manufacturers, Chapel-lane, Hull.  
 Fidge, Stevens & Co., lightning conductor manufacturers, Brunswick Works, Robinhood-lane, Poplar, London, E.  
 Field, James J., ink manufacturer, 455, Caledonian-road, London, N.  
 Fielding & Co., earthenware manufacturers for electrical purposes, Railway Pottery, Stoke-on-Trent.  
 Fielding & Higginbottom, acid manufacturers, New Mills, Stockport.  
 Findlay, J., & Co., cotton waste manufacturers, 113, Virginia-place, Glasgow.  
 Firmin, Hill & Co., metal merchants, 3 & 4, Great Winchester-street, London, E.C.  
 Fleay, J. M., electric lamp and lustre manufacturer, 72, Cable-street, Liverpool.  
 Fleming, Thomas, Son & Co., leather driving band makers, West Grove Mill, Halifax.  
 Fletcher, J. W., telegraph engineer L. & N. W. Ry., London-road Station, Manchester.  
 Flockton, Tompkin & Co., magnetic steel manufacturers, Newhall Steel Works, Attercliffe, Sheffield.  
 Flood, G. H., & Co., steam engine makers, 25 & 27, Holland-street, Blackfriars, London, S.E.  
 Forbes, Professor G., consulting electrical engineer, 35, Duke-street, St. James'-square, London, S.W.  
 Ford, Thos., electric light fitting maker, Victoria Works, 86, Emily-street, Birmingham.  
 Forde, H. C., electrical engineer, 6, Duke-street, Adelphi, London, W.C.  
 FORREST, G. & SON, electric light engineers, 23, New-street-square, London, E.C.  
 Forster & Gregory, manufacturing and metallurgical chemists, Greyhound-lane, Streatham-common, London, S.W.  
 Forth Bank Foundry Co., iron telegraph pole manufacturers, Bo'ness, Linlithgowshire.  
 Foslett, J., electric bell manufacturer, 8, Charles-street, Newport, Mon.  
 Foster, Blackett, & Wilson, lead pipe manufacturers, 2, Mining-lane, London, E.C., & Lombard-street, Newcastle-on-Tyne.  
 Foster, E., & Son, steam engine indicator manufacturers, Central Works, Woolshipe, Halifax.  
 Foster & Williams, flexible gas, speaking, telephone, &c., tube makers, india rubber and gutta percha manufacturers and dealers, 87, Grange-road, Bermondsey, London, S.E.  
 Foster, Professor G. C., electrician, 12, Hildrop-road, Brecknock-road, London, N.  
 Foster, Professor Wm., M.A., F.C.S., analytical chemist, Middlesex Hospital, Berners-st., London, W.  
 Foulger, Charles, electric bell and indicator manufacturer, 56, Wapping, Liverpool.  
 Fowler, J., & Co., railway signal manufacturers, Indin-buildings, Edinburgh.  
 Fowler, J., & Co., steam engine makers, Leathley-road, Hunslet, Leeds.  
 Fowles, Thomas & Co., electrolier, lamp, & lustre manufacturers, 200, Ebury-street, London, S.W.  
 FOX, EDWIN, & CO, Limited, galvanized iron, steel, and telegraph wire manufacturers, 5, Great Winchester-street, London, E.C.; Magnetic Telegraph Wire Works, 54, Westferry-road, Millwall, E.  
 Fox, S., & Co., Limited, telegraph & telephone wire manufacturers, Stock's-bridge Works, 29 & 31, Carver-street, Deepcar, Sheffield.  
 Fox, St. George Lane, & Co., electric engineers, 39A, Threadneedle-street, London, E.C.  
 Fox, E. (agent for Taylor, Tunnichiff & Co.), earthenware manufacturer for electrical purposes, Bartlett's-buildings, London, E.C. *See index to advertisers.*

- Fox, T., reflector and shade manufacturer, 90, Hatton-garden, London, E.C.  
 Foxcroft, John F., telegraph instrument case maker, 39, Lever-street, London, E.C.  
 FOXCROFT, WM. M., telegraph instrument case maker, 36, Percival-street, Clerkenwell, London, E.C.  
 Wholesale maker of the Gower-Bell telephone cases, as adopted by her Majesty's Government.  
 Perforator lock and block single needle bell sounder, transmitter, photometer, ammeter (Ayrton and Perry's), and indicator cases. Prize medal Paris, 1881. *See index to advertisers.*  
 France & Morgan, ships' telegraph makers, 79, 91, Warroch-street, Anderston, Glasgow.  
 Francis & Co. (F. R. Francis, C.E., manager), Eagle Telegraph Works, Hatton-garden, E.C.  
 Francis, F. R., C.E., telegraph engineer, Eagle Telegraph Works, Hatton-garden, E.C. ; Oxford-house, Lawford-road, London, N.W.  
 Frank, Theodore, chemical merchant, 1, Scott's-yard, Bush-lane, London, E.C.  
 Franklin, Hy. & Co., leather driving band manufacturers, 72 to 78, Gedling-st., Dockhead, London, S.E.  
 FRANKS, ROBINSON & CO., small work turners in vulcanite, ivory and hardwoods for electrical, telegraphic and telephonic purposes, 76, Milton-st, Fore-street, London, E.C. *See index to advertisers.*  
 French, A. St. Geo., & Co., electricians, 21, Finsbury-pavement, London, E.C.  
 French Electrical Power Storage Co., Limited, electric light contractors, 71, Queen-street, London, E.C.  
 French, J. & Co., leather driving band makers, 71 & 73, Commercial-street, London, E.  
 French Metropolitan General Electric Co., Limited, electric light contractors, 71, Queen-st, London, E.C.  
 Freund, Henry, zinc merchant, 16, Fuller-street, Bethnal-green, London, E.  
 Frew, John & Co., manufacturing chemists, 129, Mid-wharf, Port Dundas, Glasgow.  
 Frictionless Brush Co., frictionless metallized brass bearings, Buchanan Works, Dundee.  
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## R.

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 Railway & Electric Appliance Co., electrical engineers, Rosehill Works, Polmadie-road, Glasgow.  
 Ramsden, Camm & Co., manufacturers of telegraph wire of high conductivity, Brighouse, Yorkshire.  
 Ransomes, Head & Jefferies, steam engine makers, 9, Gracechurch-st., London, E.C.; and at Ipswich.  
 Ransomes & Rapier, railway signal manufacturers, Waterside Iron Works, Ipswich.  
 Rapiéff, John, galvanic battery manufacturer, Hurst-lodge, Hudley Wood, Barnet, Herts.  
 Ratcliff, Edmund, electrolier manufacturer, 292, High Holborn, London, W.C., and 59, St. Paul's-square, Birmingham.  
 Ratcliffe, J. H., cotton driving band maker, Kinder Lee Mills, Charlesworth, Broadbottom.



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- Raworth, John S., electric light engineer, 6, St. Mary's-gate, Manchester.
- Rayment, Wm. & Co., glass benders, 157, St. John-street, London, E.C.
- Reade Bros. & Co., manufacturing chemists, Victoria-street Works, Monmore-green, Wolverhampton.
- Reading Iron Works Company, Limited, mechanical engineers, Reading, Berks.
- Ready, Alf. John, chemical merchant, 47, Tower-chambers, Finsbury-pavement, London, E.C.
- Reckenzann, A., C.E., mechanical engineer, 8, Osborne-road, Forest-gate, London, E.
- Redcliffe Crown Galvanized Iron Company, galvanizers, 118, Cannon-street, London, E.C.
- Reddall, Wm., permanent way for electric wires, 10, South-street, Finsbury, London, E.C.
- Redmond, D. D., M.D., electrician and consulting electrical engineer, 126, Sandford-road, Dublin.
- Redruth Tin Smelting Company, tin merchants, Golden Heart Wharf, Dowgate, London, E.C.
- Redwood, Dr. Theophilus, analytical chemist, 17, Bloomsbury-square, London, W.C.
- Reed, Michael Alfred & Co., antimony dealers, 12, Fenchurch-street, London, E.C.
- REID BROS., manufacturers of electric light apparatus, electric alarms, electric lamps (arc and incandescent) lightning conductors, telegraph insulators, and dynamo magneto and electric machines, 12, Wharf-road, London, N. *See index to advertisers.*
- Reinhard, G., wire drawer, 9, New Broad-street, London, E.C.
- Rennie, James & Co., metal merchants and dealers, 19, Exchange-bldgs., Stephenson-place, Birmingham.
- Rennie, John, india rubber manufacturer and dealer, 128, High Holborn, London, W.C.
- Reuter's Telegram Co., 24, Old Jewry, London, E.C.
- Reynolds & Co., flat wire staples especially prepared for fixing conducting wire, 57, New Compton-street, London, W.C. *See index to advertisers.*
- Reynolds, G., wire drawer, Summerford-brook, Willenhall.
- Reynolds, Thomas, asbestos manufacturer, 100, Aston-road, Birmingham.
- REYNOLDS, W. T., P.H.D., electrician, 2, St. Helen's-terrace, Mile End-road, London, E.
- Rhodes, Hiram Fredk., magnet manufacturer, 123, Ledsam-street, Birmingham.
- Rhodes, J., wire drawer, 8, Northgate, Bradford.
- Rhodes, J., wire drawer, Brook Foot Wire Mills, Horsforth, Leeds.
- Rice, R. S., analytical chemist, 33, Wharf-street, Leicester.
- Richards, Kearne, & Co., alkali manufacturers, Malkin's-bank, Betchton, Sandbach.
- Richardson, E. & J., leather driving band makers, Elswick Leather Works, Elswick.
- Richardson, J., & Co., manufacturing chemists, Friar-lane, Leicester.
- Richardson, Koolman & Isger, electrotypers, Harp-alley, 82, Farringdon-street, London, E.C.
- Richardson, J., wire drawer, 1, Bank-buildings, Manchester-road, Bradford.
- Richardson, Jas. Edwin, india rubber manufacturer, 12, Duke-street, London-bridge, London, S.E.
- Richardson, J. T. H., glass globe manufacturer, Castle Glass Works, Hatton, Tutbury, Burton-on-Trent.
- Richardson, J. W., metal merchant, Ferry-road, Middlesborough.
- Richardson, R., electro plate manufacturer and dealer, 28, Holborn-viaduct, London, E.C.
- Richardson, T. R., medical galvanist, 1, South-terrace, London-road, Derby.
- Rickard, William, wire manufacturer and coverer, cable manufacturer and silk spinner, Ashbourne-road Mills, Derby; London agent, Edwin Holloway, 2, Gutter-lane, E.C. *See index to advertisers.*
- RIDDELL, WM. & CO., wire drawers, wire workers and weavers, Springfield-road, Glasgow.
- Ridley, J. C., manganese merchant, King-street, Newcastle-on-Tyne.
- Ridyard, W., manufacturing chemist, Oxford-street, Bilston, Stafford.
- Rimington Bros., driving band makers, Carlisle.
- Rigby, J., & Sons, telegraph wire manufacturers, Old and New Britannia Works, Wednesbury.
- Rindfleisch, E. & Co., telegraph wire manufacturers, 45, Hope-street, Glasgow.
- River Plate Telephone & Electric Light Co., Limited, 34, Walbrook, London, E.C.
- Roberts & Belk, electro-plate manufacturers and dealers, 24, Holborn-viaduct, London, E.C.
- Roberts, Dale & Co., chemical manufacturers, St. James's-street, Latchford, Warrington.
- Robertson, Betts & Co., tinfoil manufacturers, Elthorne-road, Upper Holloway, London, N.
- ROBEY & CO., high-speed engine manufacturers for electrical purposes, Globe Works, Lincoln, and 117, Cannon-street, London, E.C. *See index to advertisers.*
- Robinson & Co., electrotypers, 151, High Holborn, London, W.C.
- Robinson, W. E. & Co., manufacturing chemists, 13, Milestone-lane, Leicester.
- Robinson, H., lamp post manufacturer and tube maker, Studkins Iron Works, Stourbridge.
- Robisher, J., electrician, 49, Ardwick-green, Manchester.
- Rocks Tin Mining Company, Limited, 32, Walbrook, London, E.C.
- Roe, E., insulators for electrical purposes, Tolworth Lodge, Surbiton, Surrey.
- Rogers, F. M., electric light patentee and contractor, 21, Finsbury-pavement, London, E.C.
- Rogers, G. F., telegraph contractor, 5, Great Winchester-street, London, E.C.
- Rogers, J., wire drawer, 79, Victoria-street, Belfast.
- Rogers, John, felt maker, 1, Fenchurch-street, London, E.C.
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 ROUND, B. J., electro-gilder and plater, 9, Northampton-street, Birmingham.  
 Rowan, F. J., electrical engineer and contractor, 134, St. Vincent-street, Glasgow.  
 ROWAT, A., & CO., wire workers and weavers and boiler tube brush makers, 25, Candleriggs, Glasgow.  
 Rowbottom, F., leather driving band maker. Works, Moor Mill, New Mill, near Stockport.  
 Rowbottom, J., cotton driving band maker, Holehouse Mills, Charlesworth, near Manchester.  
 Rowbottom, Samuel, cotton driving band maker, Meadow Mills, Glossop.  
 Rowell, D. & Co., telegraph contractors, 2, Poet's-corner, Westminster, London, S.W.  
 Rowson, Drew & Co., zinc merchants, 225, Upper Thames-street, London, E.C.  
 Royal Galvanic Baths, electric specialties, 65, Marylebone-road, London, W.  
 Royal Microscopical Society, King's College, London, W.C.  
 Royal Society, Burlington-house, Piccadilly, W.  
 Royston, J., Son & Co., telegraph wire manufacturers, Lea Bank Wire Mills, Shroff's-road, Halifax.  
 Ruels & Co., chemical glass and apparatus manufs., 28, Goldhawk-road, Shepherd's-bush, London, W.  
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 Russell, Edward & Co., india rubber manufacturers, 34A, High Holborn, London, W.C.  
 Russell, F., electrical engineer, 41, Coleman-street, London, E.C.  
 Russell, Henry & Co., india rubber manufacturers, 19, Waterloo-road, London, S.E.  
 Russell, James & Sons, iron telegraph pole manufacturers, Crown Tube Works, Wednesbury.  
 RUSTON, PROCTOR & CO., mechanical engineers, steam engine makers for electrical purposes, engine boilers, &c., Lincoln; London office, 20, Budge-row, Cannon-street, London, E.C. *See index to advertisers.*  
 RYLANDS BROTHERS, LIMITED, wire manufacturers, 16, Church-street, Warrington.

## S.

SABEL, MAX, telegraph paper maker, 2, Coleman-street-buildings, London, E.C.  
 Sabine, R. electrician, Grosmont-house, Hampton-wick, Middlesex.  
 Sach, H., telegraph engineer, Great Eastern Railway Company, Liverpool-street, London, E.C.  
 Sadler, Michael, electrical, magnetic and galvanic apparatus manufacturer, 19, Aston-street, Birmingham.  
 Sadler, Samuel A., sulphate of ammonia manufacturer, 85, Gracechurch-street, London, E.C.  
 Sadler, S. A., manufacturing chemist, Cleveland Chemical Works, Middlesbrough.  
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 St. Helen's Lead Smelting Company, St. Helen's, Lancashire.  
 St. Rollox Chemical Works, 229, Castle-street, Glasgow.  
 Salamon, Sir David, Bart., M.A., electrical engineer, Broomhill, Tunbridge Wells, Kent.  
 Sampson, Low, Marston, Searle & Rivington, publishers of electrical works, Crown-buildings, 188 Fenchurch-street, London, E.C. *See index to advertisers.*  
 Sanderson & Co., lightning conductor and electric bell manufacturers, Loaden-hall-house, 101, London-street, London, E.C.  
 Sanderson Bros., & Co., Limited, steel wire manufacturers, 19, Walbrook, London, E.C.  
 Saul, David H., electric bell manufacturers, 44, Barbican, London, E.C.  
 Saunders, W. & J. electro-platers supply factors, 3, Augusta-street, Birmingham.  
 Saunders, H. C., telegraph engineer, 66, Old Broad-street, London, E.C.  
 Saunders, J. B., & Co., telegraph engineers, Cardiff-street, Tinternmouth.  
 Saunders, J. B., telegraph engineer, The Laurels, Taunton.  
 Saverno, F., modeller, 53, Watergate-street, Chester.  
 SAX, JULIUS, electric telegraph engineer, electric bells, alarms, telephones, &c., 108, Great Russell-street, and Bedford Telegraph Works, Store-street, Bedford-square, London, W.C.  
 Saxby & Farmer, railway signal mfs. (block system, &c.), Canterbury-road, Kilburn, London, N.  
 Schaffer & Budenburg, steam engine indicator makers, 202, Hope-street, Glasgow.  
 Schlesinger, A. & Co., electrolier manufacturers, 8, Coleman-street, London, E.C.  
 Scheinfeld, J., india-rubber manufacturer, 21, Jewin Crescent, Aldersgate-street, London, E.C.  
 Schofield, Thomas M., lightning conductor manufacturer, 10, Tulkitt-street, Southport, Lancashire.  
 Scholzig, O., glass globe manufacturer, 9, New Broad-street, London, E.C.  
 School of Telegraphy and Electrical Engineering, 12, Princes-street, Hanover-square, London, W.  
 SCHOTH, G. A., electrical instrument maker, 232, Euston-road, London, N.W.  
 Schreiber, Frank Wm., tinplate manufacturer, 5, Bond-court, Walbrook, London, E.C.  
 Schulte, Chas. agent, iron wire manufacturer, Exchange-buildings, Stephenson-place, Birmingham.  
 manufacturers of wire rods, telegraph and rope wire.  
 Scott Bros., telegraph wire manufacturers, Nutford Vale Works, West Gorton, Manchester.

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- Scott, Ronald A., manufacturing electrician, 6, Pomona-place, Fulham, London, S.W.
- Scott, W., & Maxwell, lamp post manufacturers, Tranmere, Foundry-street, Birkenhead.
- Scott & Co., acid manufacturers, Marsh-gate-lane, Stratford, London, E.
- Scott, F. W., wire drawer, 63, Bishopsgate-street Within, London, E.C.
- SCOTTISH ASBESTOS COMPANY, LIMITED (T. Baxter, Agent), 79½, Gracechurch-street, London, E.C.
- Scottish Spelter Company, Lower Greenhill, Stirlingshire.
- Scottish Telegraph Construction and Maintenance Company, North-area, Royal Exchange, Glasgow.
- Scottish Vulcanite Company, Limited, Edinburgh. London offices, 5, Aldermanbury Postern, London-wall, E.C.
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- SELIG, SONNENTHAL & CO., engineers and importers of American and other special tools and machinery, 85, Queen Victoria-street, and Lambeth-hill, London, E.C. *See index to advertisers.*
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- Sharples, G., electrician, telegraph and electric light engineer, 7, Fishergate, Preston, Lancashire.
- Sharrow & Anderson, electrotypers, 5, West-street, Seven-dials, London, W.C.
- Shaw, H., & Son, magnet makers, 45 and 47, Monmouth-street, Sheffield.
- Shaw, J. & Sons, wire drawers, Bradford-road, Brighouse.
- Shaw, John, telegraph wire mnfr., Yorkshire Iron and Wire Works, Soho-st., Eccleshall-road, Sheffield.
- Shaw's Brow Iron Company, wire drawers, 93, Upper Thames-street, London, E.C.
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- Shepherd, Hill & Co., engineers' tool makers, Hunslet-road, Leeds.
- SHIPPEY BROTHERS, electric light contractors, 13 and 14, King-street, Cheapside, London, E.C. *See index to advertisers.*
- Shirlaw, A. & Co., engineers' tool makers, 70 and 71, Bishopgate-street-within, London, E.C.
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- Shropshire Iron Company, Limited, telegraph wire manufacturers, Hadley, Wellington, Salop.
- Shurlock, Chas., and Son, air-tight glass case makers, 34, Grange-street, Hoxton, London, N.
- SIEMENS BROS., & CO., LIMITED, electric light engineers and contractors, 12, Queen Anne's-gate, Westminster, S.W.
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- Sigrist, Richard, electrolier lamp and lustre manufacturer, 37, Tustin-street, Old Kent-road, London, S.E.
- Silverlock, H., electrotyper, 92, Blackfriars-road, London, S.E.
- SIMMONS, C. J., electrical testing instrument manufacturer, 56, LEVERTON-STREET, LEIGHTON-ROAD, KENTISH TOWN-ROAD, LONDON, N.W., galvanometers, resistance coils, condensers, keys, switches, &c. For land and marine service. *See index to advertisers.*
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- Simpson & Co., lighthouse engineers, 101, Grosvenor-road, Pimlico, London, S.W.
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- Single Wire Multiple Telephone Signal Co., Limited, telephone apparatus makers, 11, Old Broad-street, London, E.C.
- Sington, A. & Co., electric light engineers, 5, St. Peters-Square, Manchester.
- Sinsey, C. R., telegraph engineer, 55, Fawcett-street, Sunderland.
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- Skirrow & Mortlock, spelter manufacturers, 198, Upper Thames-street, London, E.C.
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- SLATER & PALMER, telegraphic ink manufacturers, inks for the Morse and other telegraphic instruments, 8, Wine Office-court, Fleet-street, London, E.C.
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- Smith Bros. & Co., brass masters & merchants, Hyson Green Works, Hyson Green, Nottingham.
- Smith Bros., lamp post manufacturers, Abbey-street, Derby.
- Smith & Chamberlain, electrical engineers, 3, New Bartholomew-street, Birmingham.
- Smith, Charles, & Son, glass globe makers, 63, Charing-cross, London, S.W.
- SMITH & COVENTRY, tool manufacturers, Gresley Ironworks, Ordall-lane, Manchester.
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- Smith, George & Son, lightning-conductor manufacturers, 59, Martin-street, Jamaica-road, Bermondsey, London, S.E.
- Smith, Henry Samuel & Co., chemical merchants, 8, Cullum-street, London, E.C.
- Smith, John & Sons, brass manufacturers, 18, St. John's-square, London, E.C. and 61 Chester-street, Birmingham.
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- SMITH, SAMUEL & CO., grease merchants, 33, Compton-street, Goswell-road, London, E.C. *See index to advertisers.*
- Smith & Stephens, telegraph cable making machine manufacturers, James Works, Queen's-road, Battersea, London, S.W.
- Smith, Thomas & Co., chemical glass and apparatus manufacturers, Verney-rd., Old Kent-rd., London, E.
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- Smith, Alexander, india rubber and gutta percha telegraph goods merchant, 20, Dixon-street, Glasgow.
- Smith, B. G., lead pipe manufacturer, Hope-street, Halifax.
- Smith, George, crucible manufacturer, Fauldhouse-street, Rutherglen-road, Glasgow.
- Smith, G. E., telegraph engineer, 210, North Sherwood-street, Nottingham.
- Smith, J., brass finisher, Traffic-street, Derby.
- Smith, W., lighthouse engineer, 60, Sandhill, Newcastle.
- Smithers, Fredk. O., manganese merchant, 9, New Broad-street, London, E.C.
- SNELL & GLENDENING, manufacturing electricians and electrical engineers, St. Paul's-building, Paternoster-row, London, E.C. *See index to advertisers.*
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- Snowden, Jasper & Wm., mechanical engineers, Old Bank Chambers, Leeds.
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- Society of Arts, 18, John-street, Adelphi, London, W.C.
- SOCIETY OF TELEGRAPH ENGINEERS AND OF ELECTRICIANS, 4, The Sanctuary, Westminster, London, S.W. F. H. WEBB, Secretary.
- Somerville & Smith, air-tight glass case makers, 34, Eagle-street, Red Lion-street, London, W.C.
- Somerville, C., india rubber manufacturer, 34A, Belvoir-street, Leicester.
- Sothern, S., lightning conductor manufacturer, 25, Henblas-street, Wrexham, North Wales.
- South African (Brush) Electric Light and Power Company, Limited, electric light contractors, Copthall-buildings, London, E.C.
- South Down Metal & Chemical Company, Limited, manufacturing chemists, 8, Old Jewry, London, E.C.
- South-Eastern Brush Electric Light and Power Company, Limited, 110, Cannon-street, London, E.C.
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- Spark Alex., electric bell manufacturer, 187, George-street, Aberdeen.
- SPENCE, J. BERGER & CO., electric light and telephone contractors, 34, Lombard-street, London, E.C. *See index to advertisers.*
- Spencer, William, patent office, 8, Quality-court, Chancery-lane, London, W.C.
- SPENCER, JAMES E., AND SAMUEL, tube manufacturers, 3, Queen-street-place, London, E.C.
- Spencer & Watson, chemical merchants, Guildhall-chambers, Newcastle-on-Tyne.
- Spencer, John, telegraph contractor, Neal-street, Spon-lane West Bromwich.
- Spencer, Thomas, analytical chemist, 32, Euston-square, London, N.W.
- Spell, George, & Co., india rubber manufacturers, 256, Mile-end-road, London, E.
- Spiller, George, manufacturing electrician and electric apparatus for lighting gas (Clarke's system), 3, Wigmore-street, Cavendish-square, London, W.



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Stanley, W. F., mathematical instrument maker, 4, Great Turnstile, Holborn, London, W.C.; and 13, Railway-approach, London-bridge, S.E.; Works, Norwood Junction.  
Stanton Bros., metal merchants, 73, Shoe-lane, London, E.C.  
Stanton, Fredk. & Edwin, wire drawers, wire for scratch brushes for electric purposes, Lewisham, S.E.  
STANTON IRON WORKS COMPANY, LIMITED, iron founders and electric lamp posts manufacturers, 9, Bridge-street, Westminster, London, S.W.  
Starnes, J. S., & Sons, electric light engineers, 12, Broad-street, Ratcliff, London, E.  
Statham, H., & Co., steam packing manufacturers, 9, 10 and 11, Corporation-street, Manchester.  
Staynes & Son, leather driving bands, 60 & 62, High-street, Leicester.  
Stead, Frank V., electrician, 50, Lombard-street, London, E.C.  
Sterne, L., & Co., Limited, mechanical engineers, gas engine makers (Clerk's patent), 40, Cannon-st., London, E.C.; and at Glasgow.  
Stevens, J. J., & Sons, railway signal manufacturers, 470, New City-road, Glasgow.  
Stevens, Pellatt & Co., leather driving band makers, 57, Lant-street, London, S.E.  
Stevens & Sons, railway signal manufacturers, 237 & 243, Southwark Bridge-road, London, S.E.  
Stevens, Edward, galvanizer, Quarry Bank, Brierley-hill, Stafford.  
STEVENS, F. A., electric bell and electrical instrument manufacturer, 17, Duke-street, London, E.C.  
Stevenson, Carlile & Co., manufacturing chemists, 23, West Nile-street, Glasgow.  
Stevenson, D. & T., lighthouse engineers, 84, George-street, Edinburgh.  
Stewart, A. & J., Limited, telegraph pole manufacturers, 41, Oswald-street, Glasgow.  
Stewart, C., & Son, galvanizers and galvanized iron wire manufacturers, Pountney-st., Wolverhampton.  
Stewart, D. Y., & Co., lamp post manufacturers, Charles-street, St. Rollox, Glasgow.  
Stewart, John, & Co., steel manufacturers and merchants, 28, 30 & 32, Oswald-street, Glasgow.  
Stewart, A., asbestos manufacturer, Main-street, Barrhead, Glasgow.  
Stieber, John Balth & Son, brass and copper wire manufacturers, 5, Godliman-street, London, E.C.  
STIFF, JAMES, & SONS, battery jars, porous cells and insulator manufacturers, High-street, Lambeth, London, S.E. *See index to advertisers.*  
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Stokes Bros., electric lamp manufacturers (Arc), 14, Finsbury-square, London, E.C.  
Stone, J. & Co., anti-friction metal makers, Deptford High-street, London, S.E.  
Stopes & Co., electrical sundries manufacturers, 24A, Southwark-street, London, S.E.  
Storer, D., & Sons, chemical merchants, 128, Leadenhall-street, London, E.C.  
Storey, L., & Sons, anti-friction metal merchants, 35, Little Peter-street, Knott Mill, Manchester.  
Stothert & Pitt, lighthouse engineers, Newark Foundry, Lower Bristol-road, Bath.  
Stott, F., wire drawer, Hartshead, Normanton.  
Stott, J. F., wire drawer, Buxton-road, Huddersfield.  
Straeten, Edmund Van der, spelter manufacturer, 11, Queen Victoria-street, London, E.C.  
Strangeways, H. B. T., telephone apparatus maker, 2, Cambridge Park-gardens, Twickenham, Middlesex.  
Strode & Co., electrolier manufacturers, 48, Osnaburgh-street, Regent's-park, London, N.W.  
Stuart Electric Light and Power Company, Limited, electric light contractors, 11, Queen Victoria-street, London, E.C.  
Stuart, Peter (Stuart & Co.), telegraph engineer, permanent way for electric wires, Edinburgh.  
Stuart, R., telegraph agent (American), and telegraphic codifier, 11, Manchester-buildings, Liverpool.  
Sturge, John & Edmund, manufacturing chemists, 18, Wheeley's-lane, Birmingham.  
Submarine Cable Trust Company (telegraph), 66, Old Broad-street, London, E.C.  
Submarine Telegraph Company, 2, Throgmorton-avenue, London, E.C.  
Sugg, William & Co., Limited, electric apparatus manfcs., Vincent Works, Westminster, London, W.  
Sullivan, E. A., railway signal maker (block system), 20, Mawbey-road, Old Kent-road, London, S.E.  
Sutcliffe, W., & Son, lead pipe manufacturers, Adelaide-street, Halifax.  
Sutcliffe, J. L., electrician, &c., 153, South-street, Moor, Sheffield.  
Sutherland, Angus, zinc manufacturer, 82, Oxford-street, Glasgow.  
STUTTON & ASH, iron and steel merchants, Snow-hill, Birmingham.  
Swan & Co., Limited, electric light apparatus manufacturers, South Benwell, Newcastle-on-Tyne.  
Swan, D. & Co., spelter manufacturers, Mary-hill, Glasgow.  
Swansea Vale Spelter Company, Limited, spelter manufacturers, Swansea.  
Sweitzer, George, electrical engineer, 35, Kennington Park-road, London, S.E.  
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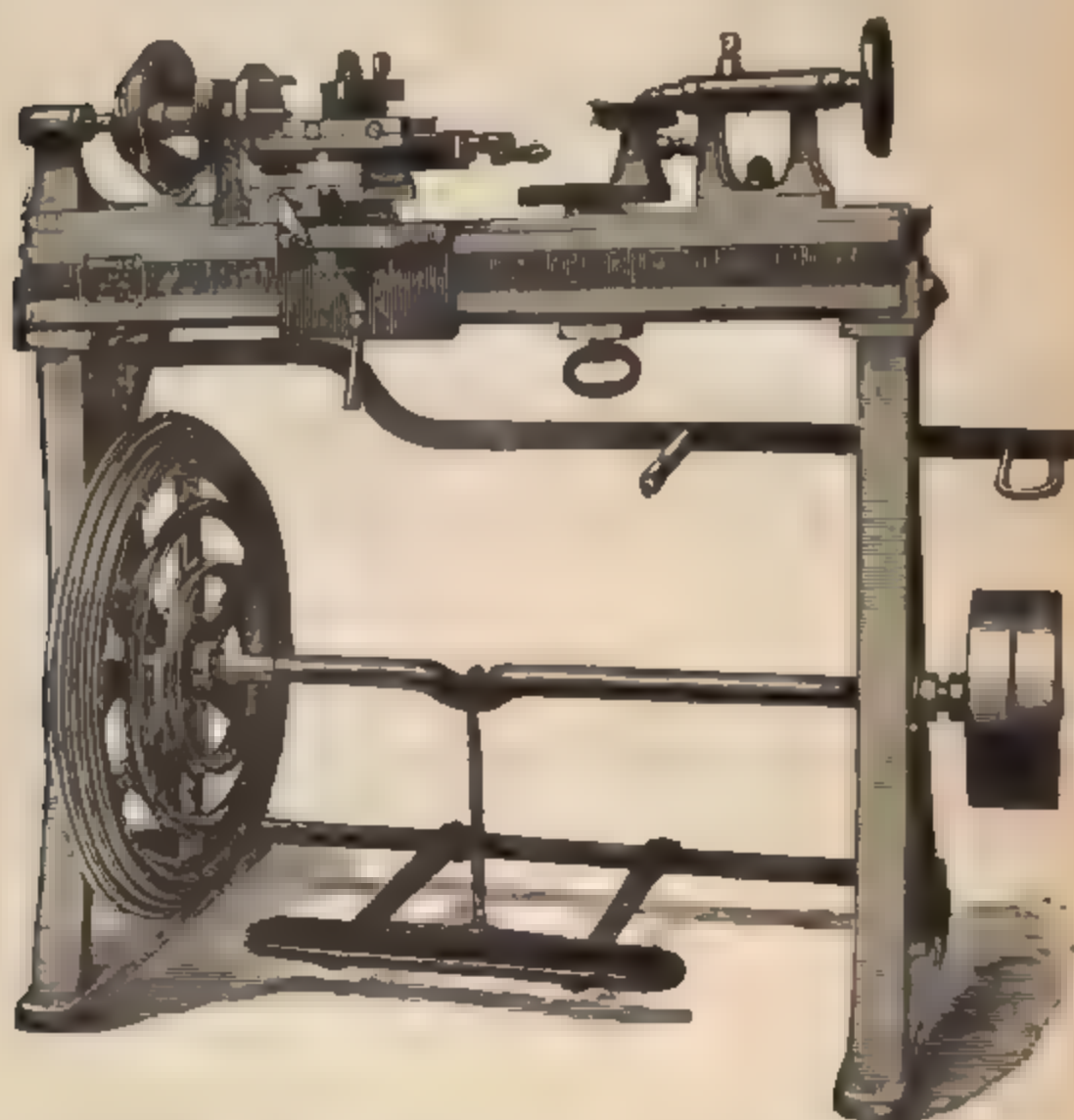
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Wrottesley, A. E., Lieut. R.E.	..	..	..	..	Middleton Lodge, Bournemouth, Hants.
Wyles, F.	..	..	..	..	Telegraph Department, London and South W Railway, Waterloo Station, S.E.
Yec, Fung	..	..	..	..	49, Portland Place, W.
Total Number of Associates					619

STUDENTS.

Ansell, Harold W.	..	..	..	..	Kildermorie, Merton Road, Wimbledon, S.W.
Bright, Charles	..	..	..	..	31, Golden Square, W.
Brooks, Edwin M.	..	..	..	..	2008, Chestnut Street, Philadelphia, U.S.A.
Dimier, Paul	..	..	..	..	5, Hyde Vale Villas, Blackheath, S.E.
Ford, Fredric. William	..	..	..	..	98, Cassland Road, South Hackney, E.
Gomez, P. J.	..	..	..	..	King's College, W.C.
Gorton, J. P.	..	..	..	..	American Cable Company, Hawkins Road, Penzan
Hancock, William J., Jun.	..	..	..	..	The Telegraph Company of Ireland, Comm Buildings, Dundee.
Hawes, F. B. O.	..	..	..	..	Cherrahurst, Weybridge, Surrey.
Joyce, S...	..	..	..	..	113, Richmond Road, Dalston, N.
Kennelly, A. E.	..	..	..	..	Eastern Telegraph Company, 66, Old Broad Street
Lewis, Robert, Jun.	..	..	..	..	"Fairlight," Croydon Road, Anerley, Surrey.
MacCarthy, C. C.	..	..	..	..	
Meredith, Wm. M.	..	..	..	..	34, Creed Place, Maze Hill, Greenwich.
Moyneham, E. J.	..	..	..	..	18, Spurstone Road, Hackney, E.
Porter, C. V.	..	..	..	..	European Telegraph Works, Pownall Road, Dalst
Rider, J. H.	..	..	..	..	European Telegraph Works, Pownall Boad, Dalst
Ruddock, A. E.	..	..	..	..	65, Cumberland Street, Pimlico, S.W.
Scott, Montagu J.	..	..	..	..	16, Church Row, Hampstead, N.W.
Shadwell, J. L.	..	..	..	..	31, Golden Square, W.
Stallibrass, Edward	..	..	..	..	31, Golden Square, W.
Taylor, Wm.	..	..	..	..	Clyde Villa, Stonebridge Park, Willesden, N.W.
Webb, Herbert L.	..	..	..	..	Spanish National Submarine Telegraph Company, Spain.
Window, H. M.	..	..	..	..	82, Fernhead Road, W.
Total number of Students					24

TOTAL NUMBER OF MEMBERS.

Honorary Members	..	..	..	..	..	4
Foreign Members	..	..	..	..	..	172
Members	..	..	..	..	..	367
Associates	..	..	..	..	..	619
Students	..	..	..	..	..	24
Total						1,186

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## GLOBE WORKS, LINCOLN, ENGLAND,

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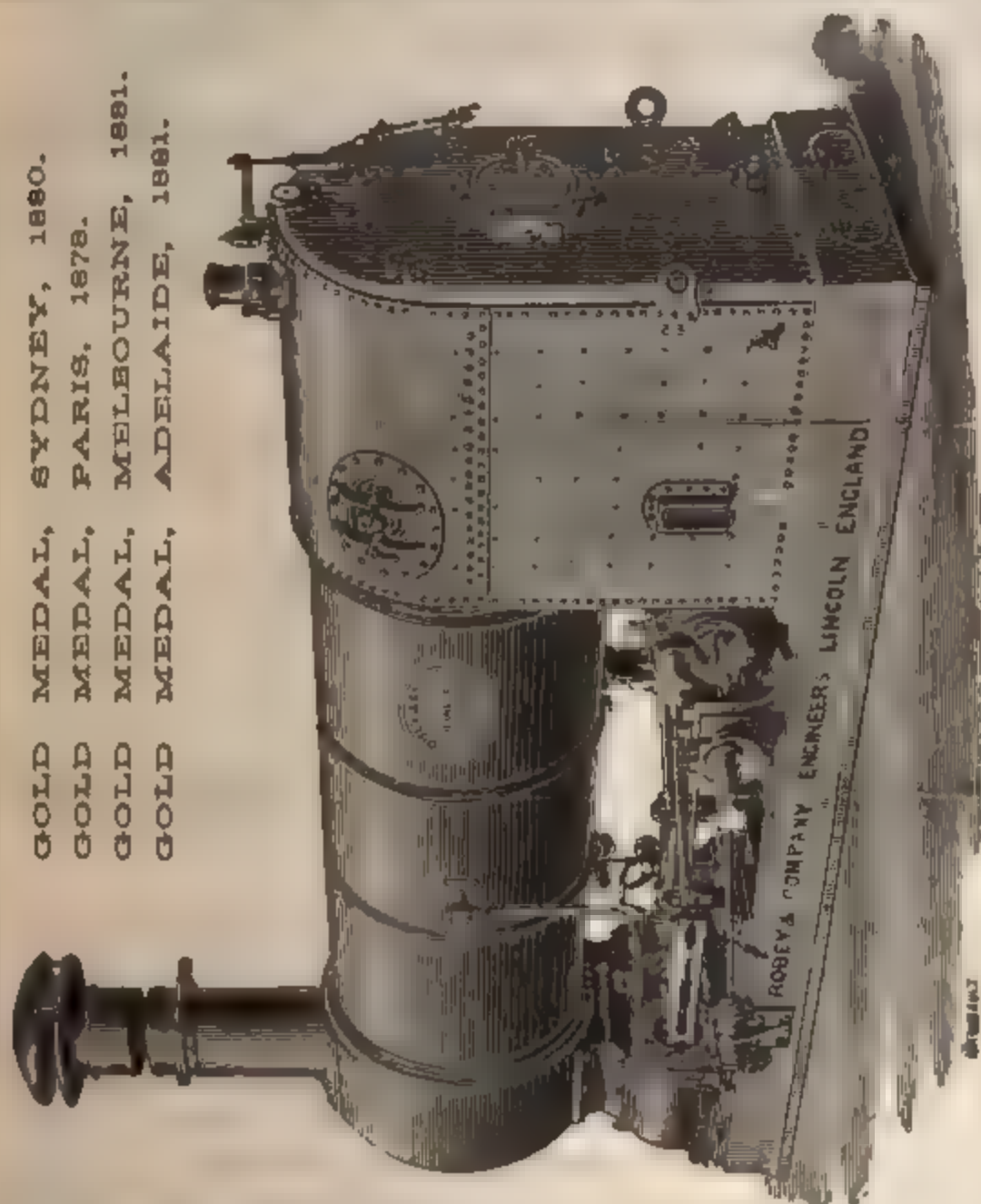
Fitted with Equilibrium Throttle Valve and Governor, which ensures the greatest steadiness in working.

HIGHEST AWARD, PARIS ELECTRIC LIGHT EXHIBITION, 1881.

HIGHEST AWARD, CRYSTAL PALACE ELECTRIC LIGHT EXHIBITION, 1882.

Upwards of 8,500 Engines of large sizes now at work.

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HIGHEST AWARD, PARIS ELECTRIC LIGHT EXHIBITION, 1881.  
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Some of the advantages of this Engine are---

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Please Note this is the Original "Robey" Engine, as designed and manufactured by Messrs. ROBEY & CO., of Lincoln. All others are mere attempts at Imitation.

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**"PILSEN" "JOEL,"**  
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GENERAL ELECTRIC LIGHT COMPANY  
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Electric Light Contractors to Her Majesty's Government.

SOLE PROPRIETORS OF THE PATENTS FOR  
THE "PILSEN" ARC LAMP,  
THE "JOEL" SEMI-INCANDESCENT LAMP,  
AND THE "GATEHOUSE" INCANDESCENT LAMP.

BY ROYAL



LETTERS PATENT.

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PARIS, 1881.

LONDON, 1882.

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Applications for estimates to be made to the Secretary at the offices of the Company.

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. Berger & Co., 31, Lombard-street, E.C.

WOLVERHAMPTON ELECTRIC LIGHT, GE & ENGINEERING CO. s Parker & P. Bedford Elwell), Com-road Works, Wolverhampton.

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*to advertisers.*

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*F.—Acides (Fabricants d').*

*G.—Säure-Fabrikanten.*

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J. & Co., 1, Fenchurch-av., London, E.C.

: Higginbottom, New Mills, Stockport.

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1, 3, Bishopsgate-street-without, Lon-

& CO., Marsh Gate-lane, Stratford, E., HYDROCHLORIC ACID FACTURERS.

. Berger & Co., 31, Lombard-street, E.C.

H. & Co., 60, Mark-lane, London,

son, 13A, Red Lion-st., London, E.C.

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*F.—Vitrines Hermétiques.*

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Colls, George, 68, Brunswick-place, City-road, London, N.

Drew & Cadman, 245 & 246, High Holborn, London, W.C.

FOXCROFT, WILLIAM M., 36, Percival-street, Clerkenwell, London, E.C.—Air-tight glass cases of every description.

Hay, W. & Sons, 24 & 25, Little Queen-street, London, W.C.

Hogben, Thos., & Co., 3, City-rd., London, E.C. Jeffreys, Charles, 103, Hatton-garden, London, E.C.

Natali, Elkanah, 207, Old-street, London, E.C.

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Somerville & Smith, 34, Eagle-st., Red Lion-street, London, W.C.

Swingewood, A., 21, Caroline-st., Birmingham.

Teague, John & Son, 42, Frederick-st., Gray's-inn-road, London, W.C.

Treble, George & Son, Bridge-wharf, Whitmore-road, Hoxton, London, N.

Yardley, S. & Sons, 25, Mount-pleasant, Clerkenwell, London, E.C.

## Alkali Manufacturers.

*F.—*

*G.—Alkali-Fabrik.*

Brunner, Mond & Co., Winnington-pk., North-wich.

Burnett, Thos. & Son, Lombard-st., Newcastle.

Cook Bros., 44, Dean-street, Newcastle.

Hazelhurst & Sons, Camden Works, Runcorn.

Richards, Kearne & Co., Malkin's Bank, Betch-ton, Sandbach.

Runcorn Soap & Alkali Co., Limited, Runcorn.

Walker Alkali Co., 9, Dean-st., Newcastle.

Wigg Bros., & Steele, Old Quay Copper & Alkali Works, Runcorn.



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F.—

G.—

**CUMMING & BRINKERHOFF**, American agents for J. A. Berly's "Universal Electrical Directory" Price \$3. Meyer's & Garsin's Telegraphic Cipher Code Books, &c., 219, East 18th-st., New York City, U.S.A. We do a general commission business, and will purchase anything in the market for foreign or domestic use. See index to advertisers.

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F.—

G.—

**Bockles, S. H. & Co.**, 6 & 8, Lime-st.-square, London, E.C.

**Earp, Wm. R. & Co.**, Hutton-road, Runcorn.

**London Chemical Co.**, Bow Bridge Wharf, London, E.

## Anti-Friction Metal Makers.

F.—Metal Anti-Friction.

G.—Anti-Friction-Metall-Fabrikanten.

**Bailey, W. H. & Co.**, Albion Works, Essex-st., Salford.

**BLEWS, WILLIAM & SONS** (Established 1782), 9 to 15, New Bartholomew-street, Birmingham. Dom Moltchanoff, Neghuny, Moscow, and 38, West Southfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies.

**Dewrance, John & Co.**, 158, Great Dover-street, London, S.E.

**Dixon & Brooks**, 2, London-street, Fenchurch-street, London, E.C.

**Frictionless Bush Co.**, Buchanan Works, Dundee, N.B.

**Hall, West & Co.**, Abbey Works, Nuneaton, Warwickshire.

**Lohmann, C.**, 43, London-wall, London, E.C.

**McCall, D., & Co.**, 8, Ashburnham-grove, Greenwich, London, S.E. Makers of "Kingston's Patent Anti-frictional White Metal."

**Manganese Bronze & Brass Co., Limited**, Lombard-st., Southwark, London, S.E.

**OSBORNE & CO.**, 11, Great Garden-street, London E. See index to advertisers.

**Pope, Wm., & Son**, 190 & 192, Edgware-road, London, W.

**Price & Heanes**, 69, Ratcliff-st., Bristol.

**Stone J., & Co.**, Deptford, London, S.E.

**Storey, I. & Sons**, 35, Little Peter-st., Knott Mill, Manchester.

**TANQUE BRUS.**, 35, Queen Victoria-street, London, E.C.

## Antimony Refiners and Dealers

F.—Antimoine (Raffinure d').

G.—Antimonium Läutere.

**Cookson, & Co.**, Willington Quay, Newnham Hallett & Fry, 202 Rotherhithe-st., London. Johnson, Matthey & Co., 74 to 80, Hatfield, London, E.C.

**Pratt, James Jerrane & Son**, 79, Queen Victoria-st., London, E.C.

**Pontifex, E. & W., & J. Wood**, Shoe-lane, London, E.C.

**Reed, Michael Alfred & Co.**, 12, Fenchurch-st., London, E.C.

## Asbestos Fire-proof Paint Manufacturers.

F.—

G.—

**ASBESTOS CO., LIMITED (THE UNITED ASBESTOS CO.)**, 161, Queen Victoria-st., London, E.C. Manufacturers of the Asbestos patent fire-proof paint. See index to advertisers.

## Asbestos Manufacturers.

F.—Amiante (Fab. d').

G.—Asbest-Fabrikanten.

**ASBESTOS CO., LIMITED (THE UNITED ASBESTOS CO.)**, 161, Queen Victoria-st., London, E.C. See index to advertisers.

**Bates, Arthur**, 31, Dutton-street, Manchester. **Bell, John**, 118, Southwark-st., London. See index to advertisers.

**BINNEY & SON**, 62, Queen Victoria-st., & Catherine-street, City-road, London. 22, Wellington-st., Leeds. 50, West Hill-st., Glasgow, and 63, Broad-st., Birmingham. **Dixon, Corbett & Spencer**, 26, Commercial-st., London, E.

**Fearns, Francis H. & Co.**, Trafalgar Works, Kent-road, London, S.E.

**GLASGOW ASBESTOS CO.**, London & 79½, Gracechurch-street, London, E.C.

**Hailwood, John T.**, Vindict Works, Entwistle-road, Rochdale.

**Kerly, John**, City-road, Hulme, Manchester. **Lennard, G. H.**, 5, Engine-street, Hull.

**McArd, Andrew A. & Co.**, 5, Whitechapel, Tangier-street, Whitehaven, Cumberland. **Platt, W. H. & Co.**, Staleybridge-road, & under-Lyne, Lancashire.

**Reynolds, Thomas**, 109, Aston-rd., Birmingham. **SCOTTISH ASBESTOS CO., LIMITED**.

**T. Baxter**, agent, 79½, Gracechurch-st., London, E.C.

**Stewart A.**, Main-street, Glasgow.

**United Asbestos Manufacturing Co.**, 161, 35, Corporation-street, Manchester.

**Willy & Wyatt**, Billiter House, Billiter-st., London, E.C.



**Asbestos Manufacturers—continued.**

& Rawson, 11, Queen Victoria st.,  
E.C. Sole agents for electrical goods  
United Asbestos Co.  
n, James & Son, 97, Wellington-st.,  
F., Hindpool-road, Barrow, Lancs.

**Asbestos Merchants.**

*F.—Amiante (Marchands d').*

*G.—Asbest-Händler.*

., Limited, The United, 161, Queen  
st., London, E.C. *See index to ad-*

Lowe, 2, Laurence Pountney-hill,  
E.C.

D. & Co., 49, Fenchurch-street,  
E.C.

ooks, 18, London-st., Fenchurch-st.,  
E.C.

F., Ramsay-st., Rochdale.

William & Co., 9, New Broad-street,  
E.C.

W., 15, Margaret-street, High John  
nsgow.

o., 51, New Oxford-street, London,

George & Co, Thorburn-square, Lon-

Asbestos Company, 23, Addle-street,  
E.C.

Louis, 63, Finsbury - pavement,  
E.C.

n, J. & Sons, 97, Wellington-st.,

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Makers.**

*F.—Bureau d'essai.*

*Fertiger von Laboratorien-Apparate.*

33, Strand, London, W.C.

atthey & Co., 74 to 80, Hatton-garden,  
E.C.

O., 65, Barbican, London, E.C.

**Assayers.**

*F.—Essayeurs.*

*G.—Edelmetall-Schmelzer.*

m., Alma-place, Redruth, Cornwall.  
I. W., Lower Lux-st., Liskeard,

W., West End, Redruth, Cornwall.  
I. S., 32, Holborn-viaduct, London,

d, 28, Warstone-lane, Birmingham.  
C., 74, Coleman-st., London, E.C.

H., 14, Devonshire-square, London,

atthey & Co., 74 to 80, Hatton-garden,  
E.C.

. C., 13, Dock-street, Newport, Mon.  
C., 53, Gt. Hampton-st., B'ham.

**Balance (Induction) Makers.**

*F.—Balances.*

*G.—Waagen.*

Apps, A., 433, Strand, London, W.C.

Becker, F. E. & Co., 34, Maiden-lane, Covent-  
garden, London, W.C.

BLEWS, WILLIAM & SONS (Established  
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cow, and 38, West Smithfield, London, E.C.  
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San Paulo, &c. Gas Companies.

Groves, Wm., 89, Bolsover-st., Fitzroy-square,  
London, W.

Wolters, Otto, 55, Upper Marylebone-street,  
London, W.

**Barytes Manufacturers.**

*F.—*

*G.—*

Birkenhead Barytes Co., 89, Cathcart-street,  
Birkenhead.

Lyon, J. L. & Co., 3, Love-lane, Eastcheap,  
London, E.C.

**Battery Jar Manufacturers.**

*F.—Vases poreaux (Fab.)*

*G.—Batterie-Glocken.*

Ashworth, G. L., & Brothers, Broad-st., Hanley,  
Stafford. *See index to advertisers.*

Bailey & Co., The Pottery, Fulham, London,  
S.W. *See index to advertisers.*

Baughan, W. H. & Co., Charlbury. *See index to  
advertisers.*

BOURNE, JOSEPH & SONS, 6, St. Pancras  
Station, Euston-rd., London, N.W. Works,  
Denby Pottery, near Derby. *See index to  
advertisers.*

Brayne, F., & Co., Bow Pottery, Three Mills-  
lane, Bromley-by-Bow, E.

\* Buller & Co., 32 & 33, Queen-st., London, E.C.

Clark, Latimer, Muirhead & Co., 23 to 31,  
Regency-st., Westminster, London, S.W.

Conlon, B., 22, Mount Pleasant, Liverpool.

DEFRIES, J., & SONS, 147, Houndsditch,  
London, E. *See index to advertisers.*

DOULTON & CO., 28, High-st., Lambeth,  
London, S.E.

Doulton & Watts, Lambeth Pottery, London, S.E.

ELECTRO-MOTIVE FORCE CO., LIM.,  
6, South Hanover-st., Glasgow.

HARBURG INDIA-RUBBER COMB CO.,  
138, London Wall, London, E.C.

HOUGHTON, GEO. & SON, 89, High Holborn,  
London, W.C. (Glass cells.) *See index to  
advertisers.*

Jobson Bros., Phoenix Works, Dudley.

Johnson & Phillips, 14, Union-court, Old Broad-  
st., London, E.C.

Kirkham, W., London-road, Stoke-on-Trent.

**Battery Jar Manufacturers—continued.**

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- PRICE, SONS & CO., The Old Stoneware Potteries, Bristol. *See index to advertisers.*
- STIFF, JAMES & SONS, London Pottery, Lambeth, S.E. (Established 1751.) *See index to advertisers.*
- TAYLOR, TUNNICLIFF & CO., 9, Bartlett's-buildings, Holborn, London, E.C. *See index to advertisers.*
- Winter, F., 138, London Wall, London, E.C.
- WOOD, WILLIAM, & CO., Albert-st. Works, Burslem.

**Battery Manufacturers.**

*F.—Piles Electriques (Fab. de).*

*G.—Electrische Batterien.*

- André, G. G., Dorking, Surrey.
- Apps, A., 433, Strand, London, W.C.
- Baughan, W. H. & Co., Charlbury, Oxon. (To the Trade only.)
- Becker, F. E. & Co., 34, Maiden-lane, Covent-garden, London, W.C.
- Berry, F. H., 18, Percival-street, Clerkenwell, London, E.C.
- Blakey, Emmott & Co., Northern Telegraph Works, Halifax, and 55 & 56, Southampton-buildings, Chancery-lane, London, W.C. *See index to advertisers.*
- Boland, W., 1, Caroline-st., Birmingham.
- CADIOT, E. H., 6, Lime-street, London, E.C. (Callaud's Battery.) *See index to advertisers.*
- Carlyle, W. A., 91 and 92, Constitution-hill, Birmingham.
- Clark, J., 43, Renfield-st., Glasgow.
- Coxeter, J. & Son. Only Prize Medal awarded specially for Medical Electricity, Paris, 1881, and Crystal Palace, Sydenham, 1882. 23 & 24, Grafton-street East, Tottenham Court-road, London, W.C.
- Dale, H. & E. J., 4, Little Britain, London, E.C., & 26, Ludgate-hill, London, E.C.
- DARLOW & CO., 443, Strand, London, W.C.
- Didier, A., 10, Berkeley-gardens, Camden-hill, Kensington, London, W.
- Economical Electric Supply Association, Churson Works, Wood-green, London, N.
- Electric Company, Limited, Adelphi Electric Works, Adelphi-ter., London, W.C.
- Electric Portable Battery and Gas Igniting Co., 7, Queen Victoria-st., London, E.C.

**Battery Manufacturers—continued.**

- Electro-Dynamic Co. of Philadelphia (Heap, general agent), Scott's-yard, Bush London, E.C. *See index to advertisers.*
- Fearn, Francis H. & Co., Trafalgar Works, Kent-road, London, S.E.
- Francis & Co. (F. R. Francis, C.E., manager), Eagle Telegraph Works, Hatton-gate, London, E.C., & Lawford-rd., London, E.C. *See index to advertisers.*
- GARNHAM & CO., Sash-court, Wilson-st., London, E.C. *See index to advertisers.*
- GARRETT, BENJAMIN COPSON, 16, Bury-square, London, E.C.
- General Electric Apparatus Co., 29, Manbury, London, E.C. Makers of the Portable Silver Battery.
- Gent, J. T., & Co., Faraday Works, Richard's-road, Leicester.
- Gray Brothers, 23, West-street, Gateshead, Tyne.
- Kinetic Engineering Co., 7, Wardrobe-Doctors'-commons, London, E.C.
- Koerber, J. A., 44, Frith-street, Soho, London, W.
- LEVY, ARMAND, 252, Goswell-rd., London, E.C., and 42, Rue de Ruysbroeck, Brussels. Electrical sundriesman. Medical battery. Sole agent for Trouvé's photophore electric of which the medical press of all countries have spoken so advantageously. *See index to advertisers.*
- Maggregor & Higgs, 20, George-st., Edinburgh.
- Morris Brothers, Hartington-building, Broad-street, Birmingham.
- Morris, Timothy, 3 & 4, Market-street, Birmingham. Medical Battery Manufacturers, Galvanic & Electricians.
- Parkes, F., 132, Burton-road, Derby.
- Rapieff, John, Hurst Lodge, Hudley Barnet, Herts.
- Richardson, T. R., 1, South-ter., London, Derby.
- Schoth, G. A., 232, Euston-road, London.
- Spence, J. Berger & Co., 31, Lombard-st., London, E.C.
- Thompson, R., 5, Devonshire-square, Bury-street Without, London, E.
- Toynbee, E., 18, Malvern-villa, Willemsden.
- Tyer, G. & Co., Ashwin-st., Dalston Junction, London, E.
- Vulcan Manufacturing Co., Vulcan Works, Cliffe-street, City-garden-row, London.
- Whalley, A., 71, Fleming-square, Blackfriars.
- WHITING, HENRY G., A.P.S. & M.S. Poultry-chambers, London, E.C.

**Bell Founders—Electric.**

*F.—*

*G.—Glocken-giesserei.*

- BLEWS, WILLIAM, & SONS (Established 1782), 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliunsky, Moscow, and 38, West Smithfield, London. Contractors to the Cities of Moscow, St. Petersburg, &c. Gas Companies.

**Bell Hanging Engineers.**

*F.—Poseurs de Sonnettes.*  
*-Ingenieure für Elektrische-Glocken.*

WILLIAM & SONS (Established 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, Sao Paulo, &c. Gas Companies.

**Bromate of Potash Makers.**

al Electric Supply Association, Churson Wood Green, London, N.

**Bismuth Merchants.**

*F.—Bismuth (Marchands de).*  
*G.—Bismuth-Händler.*  
 Matthey & Co., 74 to 80, Hatton-gar-  
 ondon, E.C.

**Blacklead Manufacturers.**

*F.—Graphite (Fab. de).*  
*G.—Reisblei.*  
 ase, Jas. C., Soho Works, Wakefield.

**Bolt Nut Manufacturers for Elec-  
 al & Telegraphic Purposes.**

*F.—Boulons et écrous.*  
*—Bolzen- und Schrauben-Fabriken.*  
 LL, WILLIAM, Hockley Bolt and  
 Works, Brookfield-street, Birmingham.  
 or Arm, Shackle, and all kinds of Bolts,  
 Screws, &c.  
 , WILLIAM & SONS (Established  
 9 to 15, New Bartholomew-st., Bir-  
 am; Dom Moltshanoff, Negliuny, Mos-  
 and 38, West Smithfield, London, E.C.  
 ctors to the Cities of Moscow, Mexico,  
 ulo, &c. Gas Companies.

ARMAND, 252, Goswell-rd., London,  
 and 42, Rue de Ruysbroeck, Brussels.  
 sses of screws, terminals and couplings.  
 gent for Barrière & Co., Paris. Screw  
 g machines, brass and iron draw rods, &c.  
 . Slater, 28, Hamilton-st., Birkenhead;  
 Helsby.

**Brass & Copper Founders.**

*F.—Fondeurs de Bronze et Cuirre.*  
*—Messing- und Kupfer-Giessereien.*  
 RONG, STEVENS & CO., 15, Whittall-  
 Birmingham.  
 Charles H., 59, Skinner-la., Birmingham,  
 acturer of general and cabinet brass  
 y.  
 W. H. & Co., Albion Works, Essex-st.,  
 1, Manchester.

**\* Brass & Copper Founders—continued.**

BARRETT, R. & SON, Beech-st., Barbican,  
 London, E.C.  
 Baughan, W. H., & Co., Charlbury, Oxon.  
 Economical Electric Supply Association, Churson  
 Works, Wood-green, London, N.  
 BLEWS, WILLIAM & SONS (Established  
 1782), 9 to 15, New Bartholomew-st., Bir-  
 mingham; Dom Moltshanoff, Negliuny, Mos-  
 cow, and 38, West Smithfield, London, E.C.  
 Contractor to the Cities of Moscow, Mexico,  
 San Paulo, &c. Gas Companies.  
 Clark, A. & Co., Buchanan-street, Glasgow.  
 Dale, R. F. & Co., Bear-lane, Southwark,  
 London, S.E.  
 Evered, Richard & Co., Limited, Surrey Works,  
 Smethwick, Birmingham.  
 Forrest & Son, 23, New-street-square, London,  
 E.C.  
 Glyden, Geo., 40 & 41, Oozels-st., Birmingham.  
 Hart, Son, Peard & Co., 53, Wych-st., Strand,  
 London, W.C.  
 Osborne & Co., 11, Great Garden-st., White-  
 chapel-road, London, E. See index to adver-  
 tisers.  
 PHOSPHOR BRONZE CO., LIMITED, 87,  
 Sumner-street, Southwark, London, S.E.,  
 wire and sheet mills, Bagot-street, Birming-  
 ham. Sole makers, under patents, of phosphor  
 bronze and silicium bronze.  
 Smith & Chamberlain, 3 to 6 New Bartholomew-  
 st., and 120, New Canal-street, Birmingham.  
 Smith, John & Sons, 18, 23, & 24, St John's-  
 square, London, E.C.  
 Spencer, James E. & Samuel, 3, Queen-street-  
 place, London, E.C.  
 THURKLE & Co., 5, Denmark-street, Soho,  
 London, W.  
 Watson, Arch & Co., 36, George-st., Glasgow.  
 Winfield, R. W. & Co., 47, Holborn-viaduct,  
 London, E.C.

**Brass Finishers.**

*F.*

*G.*

Bainbridge, Wm., Middlegate-st., Hartlepool.  
 Baughan, W. H. & Co., Charlbury, Oxon.  
 Benham & Froud, Chandos Metal Works, 40, 41  
 and 42, Chandos-st., Strand, W.C.  
 BLEWS, WILLIAM & SONS, 9 to 15, New  
 Bartholomew-st., Birmingham; Dom Molts-  
 hanoff, Negliuny, Moscow, and 38, West  
 Smithfield, London, E.C. Contractors to the  
 Cities of Moscow, Mexico, San Paulo, &c. Gas  
 Companies. (Established 1782).  
 BURLEY, WILLIAM, Tower-chambers, Lon-  
 don Wall, London, E.C.  
 Bush, J., Curzon-street, Derby.  
 Moss, W., 7, Warser-gate, Northumberland-  
 street, Nottingham.  
 Murdy, Geo., 55, Church-gate, Leicester.  
 Nickhols, John, 103, New North-rd., London, N.  
 Smith, J., Traffic-street, Derby.

## Brass Finishers—continued.

Snell & Glendenning, St. Paul's-buildings, 21, Paternoster-row, London, E.C.  
 Thew, Thos., 112, High-st.-east, Sunderland.  
 Webster, J., Traffic-street, Derby.

## Brass Manufacturers.

*F.—Bronze (Usines de).*

*G.—Messing-Former.*

BLEWS, WILLIAM & SONS, 9 to 15, New Bartholomew-st., Birmingham; Dom Molts-hanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. (Established 1782.)  
 Faraday & Son, 3, Berners-st., Oxford-st., London, W.  
 LEVY, ARMAND, 252, Goswell-rd., London, E.C., and 42, Rue de Ruysbroeck, Brussels. Importer of French brass rods, plain and drawn, to any pattern.

## Brass Masters and Merchants.

*F.—Bronze (Usines de).*

*G.—Messing-Former.*

BARWELL, JOHN & SONS, 28, Pickford-street, Birmingham.  
 BLEWS, WILLIAM & SONS, 9 to 15, New Bartholomew-st., Birmingham; Dom Molts-hanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. (Established 1782).  
 BOLTON, T. & SONS, Broad-street, Birmingham, and Oakamoor, Cheadle, Staffordshire.  
 Bossomaier & Co., 72, Finsbury-pavement, London, E.C.  
 Clifford, C. & Son, Rolling Mills, Fazeley-street, Birmingham.  
 Elliott's Metal Company, Limited, Selly Oak Works, Birmingham.  
 Hall Street Metal Rolling Co. (J. Bisserker, manager), Hall-street Works, Birmingham.  
 Heaton & Dugard, 77 to 80, Lower Loveday-street, Birmingham.  
 ORMISTON & CO., 25, Old-st., London, E.C.  
 Owen Arthur, 121, Shadwell High-st., London, E.  
 Smith Brothers & Co., Hyson Green Works, Hyson-green, Nottingham.  
 Smith, John & Sons, 18, 23, & 24, St. John's-square, London, E.C.

## \* Brimstone Refiners.

*F.—Fleur de Soufre.*

*G.—Schwefel-Sieder.*

Scott, W. T. & Co., Marsh-gate-lane, Stratford, London, E.

## Bronze Founders and Manufact

*F.—*

*G.—*

OSBORNE & CO., 11, Gt. Garden-st., chapel-rd., London, E. *See index to ad*

## \* Bronzists.

*F.—Bronzeurs.*

*G.—Bronzisten.*

BLEWS, WILLIAM & SONS, 9, to 1 Bartholomew-st., Birmingham; Dom hanoff, Negliuny, Moscow, and 38, Smithfield, London, E.C. Contractors Cities of Moscow, Mexico, San Paulo, Companies.  
 BLUMBERG & CO., 2, Cannon-street, 1 E.C.  
 PERRY & CO., 72, New Bond-st., Lond Sutcliffe, Isherwood, 27, Great Hamptor Birmingham.

## Cable Manufacturers.

*F.—Cables Télégraphiques.*

*G.—Kabel-Fabriken.*

Apps, A., 433, Strand, London, W.C.  
 Bullivant & Co., 72, Mark-lane, London,  
 CLARK L., MUIRHEAD & CO., 23, R street, London, S.W.  
 Clegg & Shaw, 10A, Victoria-buildings, V st., Manchester. *See index to advertiser*  
 Dixon, Corbitt & Spencer, 26, Commer London, E.  
 Felten & Guilleaume (W. F. Dennis agents), 101, Leadenhall-street, Lond *See index to advertisers.*  
 FOX, EDWIN & CO., LIMITED.  
 5, Gt. Winchester-street, London, E.C.  
 Millwall, London, E.  
 Francis & Co. (F. R. Francis, C.E., m Eagle Telegraph Works, Hatton London, E.C., & Lawford-road, Londo  
 Glover, W. T. & Co. Chief Office: 25, street, Manchester, London Office: 28, row, London, E.C. Glasgow Off Buchanan-street. *See index to advertis*  
 HENLEY'S, W. T., Telegraph Works C 8, Drapers'-gardens, Throgmorto London, E.C. *See index to advertisers.*  
 India Rubber, Gutta Percha & Telegrap Co., Limited, 106, Cannon-st., London  
 Johnson & Phillips, 14, Union-court, Ol street, London, E.C., and Victoria Charlton, London, S.E. *See index to ad*  
 Kinetic Engineering Co., 1, Wardrol Doctor's Commons, London, E.C.  
 LEVY, ARMAND, 252, Goswell-rd., E.C., and 42, Rue de Ruysbroeck, 1 Cables and wires to any specificati *index to advertisers.*  
 LONDON & DERBY ELECTRIC WI LTD., Fore-st., London, E.C. *See advertisers.*



**Manufacturers—continued.**

**N ELECTRIC WIRE CO.**, Anchor Playhouse-yard, E.C. Late of Wenildings, Ironmonger-row, Old-street, 1, E.C. *See index to advertisers.*

**Bros.**, Lea Telegraph Works, Hackney-2. (Late of Mackintosh-lane, Homerton, E.) *See index to advertisers.*

**1.**, 12, Wharf-rd., City-rd., London, N. William, Ashbourne-road Mills, Derby. agent: Edwin Holloway, 2, Gutter-ondon, E.C. *See index to advertisers.*

**. F.**, 5, Gt. Winchester-st, London, E.C. **Bros. & Co., Ltd.**, 12, Queen Anne's-Westminster, London, S.W. Telegraph ine Cables.

**Manufacturing Co.**, Vulcan Works, -street, City Garden-row, London, N. *x to advertisers.*

**Electric Co.**, 59, Moorgate-street, , E.C.

**Weatherley**, 39, Wapping High-street, , E.

**se & Rawson**, 11, Queen Victoria-street, ondon. Ordinary cable kept in stock. *x to advertisers.*

**Carbon Manufacturers.**

*F.—Charbons Electriques.*

*G.—Holzkohlen-Brennereien.*

433, Strand, London, W.C.

**h, R.**, 11, Queen Victoria-street, E.C. *See index to advertisers.*

**rbon Co. Works**: Webber-street, h, London, S.E.

**Carbon Company**, Barnsley, Yorkshire.

**. E. & Co.**, 34, Maiden-lane, Covent-London, W.C.

**;**, James W., 2, Carlisle-street, Soho-London, W.

**ight Carbon Co.**, 133A, Great Suffolk-ough, London, S.E. Every descrip-carbons for Electrical purposes. *See advertisers.*

**ighting Supply & Fitting Co., Ltd.** nd Works: 28, York-street, West-London, S.W. (Manager, W. Bridges *See index to advertisers.*

**Co.** (F. R. Francis, C.E., Manager), elegraph Works, Hatton-garden, E.C., rford-road, London, N.W.

**, F. & Co.**, Long-lane, Smithfield, E.C. *See index to advertisers.*

**N & PHILLIPS**, 14, Union-court, Old t., London, E.C.; & Victoria Works, 1, S.E. *See index to advertisers.*

**ngineering Co.**, 1, Wardrobe-place, Commons, London, E.C.

**Carbon Manufacturers—continued.**

**LEVY, ARMAND**, 252, Goswell-rd., London, E.C., and 42, Rue de Ruysbroeck, Brussels. Electrical sundriesman. Stock kept of various classes of carbons, plates, rods and cylinders for all classes of electrical and medical batteries. Carbons moulded to any sketch. Any class of special battery carbons built. Sole maker of the carbonized asbestos, giving a surface not to be obtained by any other means. *See index to advertisers.*

**LIEPMANN CARBON CO, LTD.**, Nelson Wharf, Millwall, London, E. Manufacturers of the Liepmann Carbon Rods (pure, uniform, dense), Battery Plates, Filaments, &c. *See index to advertisers.*

**WOODHOUSE & RAWSON**, 11, Queen Victoria-st., London, E.C. Pencils and Plates in stock. Supplies contracted for, tests made.

**Case Makers.**

*F.—*

*F.—*

**YOUNG, FREDERICK & CO.**, 11, Clerkenwell-green, London, E.C. *See index to advertisers.*

**Chandelier, Lustre, Glass and Brass Makers for all Electrical purposes.**

*F.—*

*G.—*

**BLEWS, WILLIAM & SONS**, 9 to 15, New Bartholomew-st., Birmingham; Dom Moltschanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. (Established 1872).

**• Charcoal Makers and Dealers.**

*F.—Charbon de bois.*

*G.—Meiler und Holzkohlen-Händler.*

**Lancaster, Edwin & Son**, 27, Rockingham-street, London, S.E.

**Scott, R. & Co.**, Marsh-gate-lane, Stratford, London, E.

**Chemical Appliance Manufacturers.**

*F.—Appareils de Chimie.*

*G.—Chemische Apparate.*

**Apps, A.**, 433, Strand, London, W.C.

**Hart, F. W.**, 8 & 9, Kingsland-green, London, E.

**How, James & Co.**, 73, Farringdon-st., London, E.C.

**Mottershead & Co.**, 7, Exchange-st., Manchester.

**ORME & CO.**, 65, Barbican, London, E.C.

**Chemical Glass and Apparatus  
Manufacturers.**

*F. Verreterie de Chimie.*

*G. Chemisches Glas.*

- Bachhoffner, Charles, St. Andrew's-bdgs., St. Andrew's-st London, E C  
 Baird & Titlock, 100, Sauchiehall-st, Glasgow.  
 BECKER, F E & CO., 31, Mark-lane, Covent-garden, London, W.C.  
 Bruyno, Francis & Co, Three Mills-lane, Bromley-by-Bow, E.  
 Cubley & Preston, 4, High-st., Sheffield.  
 DOULTON & CO., 28, High-st, Lambeth, London, S.E.  
 Griffin, John J., & Sons, 22, Garrick-st., London, W C  
 Gritton, W. H. & Sons, Holland-st., London, S.E.  
 HOUGHTON, G., & SON, 89, High Holborn, London, W.C.  
 Mace & Haldane, 77 & 78, Milton-st., Cripplegate, London, E.C.  
 May, Roberts & Co., 9, Clerkenwell-road, London, E.C.  
 Oakley, Walter Henry, 202, Grange-rd., London, S.E.  
 Pothe, H. & Co., 4, Sugarloaf-court, Leadenhall-st., London, E.C.  
 Powell, Samuel, 57, Newcomen-street, Borough, London, S.E.  
 Ruels & Co, 28, Goldhawk-road, Shepherd's-bush, London, W.  
 Shea, John, 181, Gator-st, Pockham, S E.  
 Smith, Thomas & Co., Verney-road, Old Kent-road, London, S.E.  
 STIFF, J., & SONS, High-st, Lambeth, S.E.  
 Retorts, receivers, store jars, plumbago and clay crucibles, porous cells, cylinders, plates, stoneware, insulators, and all other pottery for Electric and Telegraph work Prize Medal.

**Chemists—Analytical.**

*F. Chimistes Analytiques.*

*G.—Analytiker.*

- Attfield, Professor John, F R S, 17, Bloomsbury-square, London, W C.  
 Bamber, Hy. K., 5, Westminster-chambers, London, S.W.  
 Bannister, Richard, The Laboratory, Somerset-house, London, W C  
 Bell, Hy. Stowe, F.C.S., 46, High-st., Sheffield.  
 Buchol, Gustav, 4, Hart-st, Bloomsbury, London, W.C.  
 Blind, J. H., & Co, 75, Blackfriars-rd, London, S E, and 27, Kirby-st, Hatton-garden, London, E C.  
 BURGHARDT, DR CHARLES, A, 110, King-st, Manchester, and Victoria University, Owen's College Manchester specialises in damaged rubber goods  
 Burgoyne, Burtadges, Cyril & Faries, 10, Coleman-st, London, F C.

**Chemists Analytical—continued.**

- Cameron, M. J., 52, Lime-st, London, E  
 Carpenter, H. S, 32, Holborn-viaduct, L E C  
 Claudet, F, 6 & 7, Coleman-st., London,  
 Cleaver, Edward Lawrance, 289A, King's Chelsen, London, S W.  
 Cooper, W John, 7, Westminster-chambers, London, S.W.  
 Cownley, Alf. John, F.I.C., F.C.S., 13 church-avenue, London, E C.  
 Cripps, Joseph, 27, New Broad-st, London  
 Cross, Chas. Samuel, 606, Old Ford-road London, E.  
 Duprè, Augusto, Ph.D., F.R.S., F.C.S., 11 broke-gardens, Kensington, London, W  
 DYER, BERNARD, F.C.S., F.I.C., 17, Tower-st., London, E.C.  
 Edger, A. J. M., 13, Dean-st., Newcastle  
 Foster, Professor Wm., M A., F.C.S., Middlesex Hospital, Brompton-st, London  
 Gerland, R W., 124, Buxton-rd, Middlesbrough  
 Gore, G., LL.D., F.R.S., 67, Broad-st., 1  
 Harkness, Wm, Laboratory, Somerset London, W.C.  
 Harris, Hy. Penley, F.C.S., 14, Buck Palace-road, London, S.W.  
 Hobson, A H., F R M S, 17, Regent-st., L S.W.  
 Horn, William, P. 21A, Broad-st, Durham  
 Hughes, John, F.C.S., 79, Mark-lane, L E.C.  
 Jackson, Edgar, 106, Queen Victoria-st., don, E.C.  
 Johnson, Matthey & Co, 74 to 80 Hatton-den, London, E.C.  
 Jones, E.W.T., F.I.C., F.C.S., 10, Victoria Wolverhampton.  
 Kingzett, Chas. T, F I C., F.C.S., 2, Letch buildings, Three Colt-lane, London, E.  
 Lowe, Wm. P., Goss-st., Chester.  
 Nelson & Bayne, 173, Fenchurch-st., L E.C.  
 Nesbitt, J. C. & Son, 38, Gracechurch-st., don, E.C.  
 Pattinson & Stead, 5, Shetland-rd, Middle  
 Pattinson, John, 75, Side, Newcastle  
 Paul, Benjamin Horatio, 1, Victoria-st., minster Abbey, London, S W  
 Penney, D M, 15, High-st, Hull  
 Price, Askey P, 47, Lincoln's Inn Fields don, W.C.  
 Price, Dr David S, 26, Great George-st., don, S.W.  
 Proctor, William Wilson, 31 & 35, Side, Dean-st, Newcastle-on-Tyne  
 Redwood, Dr Theoph, 17, Bloomsbury-sq., don, W.C.  
 Rice, R S, 33, Wharf-st, Leicester  
 Smetton, Alfred, 18, Brunswick-st, L E  
 Soward, Alfred Walter, 5, Sergeant's Inn don, E.C.  
 Spencer, Thom, 32, Euston-square, London

**ts—Analytical—continued.**

George Naylor, The Laboratory,  
et-house, London, W.C.  
Wm. Hy., F.R.M.S., F.C.S., 2, Queen's-  
, St. John's Wood, London, N.W.  
ank L., 8, Victoria-chambers, London,  
, Augustus, Ph.D., F.R.S., 11, Salis-  
quare, London, E.C.  
, James Alfred, 7, Westminster-  
ers, Victoria-st., London, S.W.  
. H., 7, Union-court, Old Broad-street,  
a, E.C.

**emists—Manufacturing and  
Metallurgical.**

*Chimistes Industriels et Métallurgiques.*

*G.—Chemische-Fabriken.*

Shirley (William Kirk, Manager), Nor-  
Killamarsh, Chesterfield.  
& Sons, 164, Upper North-street, Poplar,  
a, E.  
& W., Wallsend, Newcastle.  
Ammonia Co., Ltd., 201, West-st., S.S.,  
w.  
i, G. H., Howden Dyke, Howden.  
ries' Hall, Water-lane, Blackfriars, Lon-  
.C.  
, Etruria-vale, Hanley, Stafford.  
Oliver Ross, 3, Canning-st., Calton,  
w.  
Chemical Co., Bashford.  
, W. H., & Co., Charlbury, Oxon.  
noniac, bichromate of potash, manganese.  
Chemical Co., 15, Grey-st., Newcastle.  
W., Lower Turn Lee, Glossop.  
F., Forest Side, Sutton-in-Ashfield.  
W. A., 91 & 92, Constitution-hill,  
ingham. Cyanide of Potassium & Nickle  
  
Chemical Co., Ltd., 42, Mosley-st.,  
stle.  
s & Co., T. F., 51, High-st., Hull.  
i, J. T., 168, Deansgate, Manchester.  
graphic purposes.  
ate Chemical Works, Chestergate,  
ort.  
Nettleships & Bailey, 15, Belvoir-st.,  
ter.  
H. & Son, Porthill, Longport, Stoke-on-  
st.  
hn, 44, Dean-st., Newcastle.  
& Smith, Catherine-st., Lichfield-rd.,  
ingham.  
c Son, 1A, Charles-st., Leicester.  
: Laird, 41, Candleriggs, Glasgow, and  
ovan-rd., Govan.  
ank, R., 121 & 123, Camden-st., B'ham.  
c Preston, 4, High-st., Sheffield.  
, & Co., Brickhouse-lane, Gt. Bridge,  
Bromwich.  
n Chemical Co., Ltd., 27, St. Vincent-  
Glasgow.

**Chemists—Manufg. & Metallurgical—  
continued.**

Felting, Coal, Iron & Chemical Co., Limited,  
Royal Insurance-buildings, Newcastle.  
Forster & Gregory, Greyhound-lane, Streatham-  
common, London, S.W.  
Frew, John & Co., 120, Mid Wharf, Port Dundas,  
- Glasgow.  
Galen Chemical Company, Ettingshall, Wolver-  
hampton.  
Galloway & Co., Victoria Chemical Works, Pol-  
lockshaws, Glasgow; office, 156, St. Vincent-  
street.  
Gartley, John B., 22, Springfield-ct., Glasgow.  
Gibson & Mathie, 49, Brown-street, Glasgow.  
Hannay, J. B., Annfield Chemical Works,  
Sword-street, Glasgow.  
Hardman, J. M., Stoke-on-Trent.  
Harris, Philip & Co., 9, Bull-ring, Birmingham.  
Harrison, G., Holderness-road, Hull.  
Hart, G. W., Lowry's-wharf, Wilmington-  
groves, Lime-street, Newland.  
Heath, Charles & Co., Ouseburn, Newcastle.  
Hill, James, 288, Argyle-street, Glasgow.  
Holden & Co., Whitehouse, Erdington, B'ham.  
Hunt, W. & Sons, Alkali Works, Leabrook,  
Tipton, Stafford.  
Hurlet & Campsie Alum Co., 115, Wellington-  
street, Glasgow.  
Hyde, J., Hige-street, Wednesfield.  
Jarrow Hill Chemical Co., Lombard-street, New-  
castle.  
Johnson, Matthey & Co., 74 to 80, Hatton-  
garden, E.C.  
Jones, W. & Co., Fleet-road, Middlesbrough.  
Kelvin Chemical Co., Craighall Works, Maryhill.  
Kirk, W., Killamarsh, Chesterfield.  
Litchfield, J., 50, High-street, Longton, Stafford.  
Major, J. C., Monmore-green, Wolverhampton.  
Matthews, Son, & Co., Eastgate, Great Driffield.  
Meggitt, S. & Sons, Sutton-in-Ashfield.  
Montgomery, J. & Co., 18, Bishop-street, Port  
Dundas, Glasgow.  
Morris Bros., Misterton, Gainsbro'.  
Newcastle Chemical Works, Ltd., 4, Quayside,  
Newcastle.  
Orr, J. B., 46, Cannon-street, E.C.  
Phillip, P. & Co., 57, Norfolk-street, Glasgow.  
Priory Chemical Company, Limited, 37, Napier-  
shall-street, Glasgow.  
Reade Bros. & Co., Victoria-st. Works, Monmore  
green, Wolverhampton.  
Richardson, J. & Co., Friar-lane, Leicester.  
Ridyard, W., Oxford-street, Bilston, Stafford.  
Roberts, Dale & Co., St. James'-street, Latch-  
ford, Warrington.  
Robinson, N. E. & Co., 13, Milestone-lane,  
Leicester.  
Sadler, T. A., Cleveland Chemical Works,  
Middlesbrough.  
St. Rollox Chemical Works, 229, Castle-street,  
Glasgow.  
Scott & Co., Marsh-gate-lane, Stratford, E.  
Sharon Chemical Co., Little Chester, Derby.

**Chemists—Manufg. & Metallurgical—**  
*continued.*

Shorthouse, J. & Sons, 65, Shadwell-st., B'ham.  
South Down Metal & Chemical Co., Limited, 8,  
Old Jewry, London, E.C.  
Stevenson, Carlisle & Co., 23, West Nile-street,  
Glasgow.  
Sturge, John & Edmund, 18, Wheelley's-lane,  
Birmingham.  
Tapton Chemical Works, Tapton, Chesterfield.  
Tennant, Chas. & Co., St. Rollox, and 115, St.  
Vincent-street, Glasgow.  
Warburton & Sons, Chemical Works, Worksop.  
Ward, Wm., 71, New-street, West Bromwich.  
Washington Chemical Company, 26, Grey-street,  
Newcastle.  
White, Wm. Henry, Westmore, Long Benton,  
Newcastle.  
Wilkinson, T., 24, Newgate-street, Newcastle.  
Williamson, J. C. & Co., Exchange-buildings,  
Quayside, Newcastle.  
Williamson, J. H., Golden-hill, Stoke-on-Trent.  
Wilson, James Thompson, Spital, Berwick-on-  
Tweed.  
Woolley, James, Sons & Co., 69, Market-street,  
Manchester.  
Young & Strang, 30, Gordon-street, Glasgow.

**Clock Wheel Makers.**

*F.—Roues d'horlogerie.*

*G.—Uhrräder-Fabriken.*

Beard, John, 28, Corporation-row, London, E.C.  
OPPERMANN BROS., Brewhouse-yard, 172, St.  
John's-street, London, E.C. *See index to adver-*  
*tisers.*  
Smith, J. & Sons, 18, St. John's-square, Cler-  
kenwell, London, E.C.

**Clutch Manufacturers.**

*F.—Griffes de transmission.*

*G.—*

Bagshaw, J. & Sons, Batley, Yorkshire. Addy-  
man's American Friction Clutch.  
Hall, C. E., Woodside, Meersbrook Bank,  
Sheffield.  
Walker, Sidney F. & Oliver, 195, Severn-road,  
Cardiff, and at Nottingham.

**Coils—Medical & Intensity.**

*F.—*

*G.—*

Economical Electric Supply Association, Chur-  
son Works, Wood-green, London, N.

**Coil (Wood) Makers for Batteries.**

*F.—*

*G.—*

Franks, Robinson & Co., 76, Milton-st., Fore-  
st., London, E.C. *See index to advertisers.*  
Irvin & Sellers, Preston. *See index to advertisers.*

**\* Compass Adjusters in Iron Vess**  
*F.—*  
*G.—*

Morrison, Frank, 19, Robertson-st., Glasg  
Wiggins, Fredk. & Sons, 10, King-st., T  
hill, London, E.C.

**Compass Centre Maker.**

*F.—*

*G.—*

HOLDSWORTH, SAMUEL, 54, Spenc  
Clerkenwell, London, E.C.

**Compass Makers.**

*F.—*

*G.—*

Castle & Pagan, Commercial-road, Hull.  
White, Jas., 241, Sauchiehall-street, Glasg

**\* Composition Makers—Boiler No**  
**Conducting.**

*F.—Calorifuge (Fab. de).*

*G.—Composition zur Verdichtung der Dampf*

Leabon & Corfe, Bridge-st. and Plough  
Homerton, London, E.

Orme, Fredk. & Co., 9, St. Andrew's-  
Holborn-viaduct, London, E.C. *See in*  
*advertisers.*

PAYNE & CO., 37, Eastcheap, London, E.  
WALLINGTON, GEO., jun., Froghall  
Warrington.

Wotherspoon, J. & Sons, 97, Wellingt  
Glasgow.

**\* Composition Makers—for Prever**  
**Incrustation in Steam Boilers.**

*F.—Désincrustants.*

*G.—Composition zur Verhütung des Incrustire*  
*Dampfkessel.*

BARR, ROBERT ("Ehrenbergh"), 94,  
India Dock-road, London, E.

Fearns, Francis H. & Co., Trafalgar Work  
Kent-road, London, S.E.

Hailwood, J. T., Ramsay-street, Rochdale.

LEABON & CORFE, Bridge-st. and Pl  
lane, Homerton, London, E.

Orme, Fredk. & Co., 9, St. Andrew's-  
Holborn-viaduct, London, E.C. *See in*  
*advertisers.*

Townsend & Young, Wellington-st., All Sa  
street, Bristol.

**Contractors—Electric Light.**

*F.—Eclairage électrique (Entrepreneurs d'.*

*G.—Electrisches Licht—Contractoren.*

Anderson & Munro, 136, Bothwell-st., Glas  
Anglo-American (Brush) Electric Light Cor  
tion, Limited, 108, Belvedere-rd., Lam  
London, S.E.



## ctors—Electric Light—continued.

panish (Brush) Electric Light & Power  
imited, 110, Cannon-st., London, E.C.

., 433, Strand, London, W.C.

sian Electric Light, Power & Storage  
imited, 4, Copthall-bldgs., London, E.C.

Henry, & Co., 131, Hope-st., Glasgow.

5, WILLIAM & SONS (established  
9 to 15, New Bartholomew-st., Bir-

am; Dom Moltshanoff, Negliuny, Mos-

and 38, West Smithfield, London, E.C.

ctors to the Cities of Moscow, Mexico,  
aulo, &c. Gas Companies.

Electric Light Co., Limited, offices &  
Turk's Head-yd., Turnmill-st., London,

Gold Medal at the Paris Electrical Exhi-  
1881. Gold Medal at the Crystal

Electrical Exhibition, 1882. Sole  
es for the well-known Gramme Electric

ng Machine. Contractors for the supply  
tric Light on all approved systems.

Electric Light & Power Co. for the  
el Islands & Isle of Man, Limited,

shopsgate-st. Within, London, E.C.

lectric Light & Power Co. of Scotland,  
d, 9, New Broad-st., London, E.C. (*In*

*tion*).

idland Electric Light & Power Co.,  
d, 4, Great Winchester-street-buildings,

1, E.C.

l. J. & Co., 154, Westminster-bridge-  
London, S.E.

Shaw, 10A, Victoria-buildings, Victoria-  
Manchester. *See index to advertisers.*

TON, R. E. & Co., 4, Queen Victoria-st.,  
1, E.C. Contractors to the Swan United

c Light Company. *See index to adver-*

1-Winfield, Electric Light Associa-

Cambridge-street Works, Birmingham,  
Farringdon-street, London, E.C. *See*

*o advertisers.*

S, J., & SONS, 147, Houndsditch,  
1, E. *See index to advertisers.*

Bros., 32, Queen Victoria-st., Lon-  
.C.

George, 8, Victoria-street, Shaw-heath,  
ort.

Electric Light & Power Co., Limited,  
at Winchester-st., London, E.C.

: Electric Co., Limited, 9, Soho-sq.,  
1, W.

Indian & Colonial Electric Co., Limited,  
i, Throgmorton-avenue, London, E.C.

Swan Electric Light Co., Limited, 74,  
n-st., London, E.C.

, Henry, 2, Victoria Mansions, Victoria-  
 Westminster, London, S.W. *See last page*

*tisements.*

IC FINANCE ASSOCIATION, 13 &  
ng-st., Cheapside, London, E.C. Estab-

to financially assist inventors and to  
and sell approved inventions. *Arthur*

*, General Manager.*

## Contractors—Electric Light—continued.

Electric Lighting Contract & Maintenance Co.,  
Limited, 1, Queen Victoria-st., London, E.C.

Electric Lighting Supply & Fitting Co., office  
and works, 28, York-st., Westminster, London,

S.W. *See index to advertisers.*

Electric Motor Syndicate, Limited, 3, Copthall-  
buildings, London, E.C.

Electric "Sun" Lamp & Power Co., Limited,  
St. Margaret's Offices, Victoria-st., West-

minster, London, S.W.

Francis & Co. (F. R. Francis, C.E., Manager),  
Eagle Telegraph Works, Hatton-garden,

London, E.C., and Lawford-road, N.W.

French Electrical Power Storage Co., Limited, 71,  
Queen st., London, E.C.

French Metropolitan General Electric Co., Lmtd.,  
71, Queen-street, London, E.C.

Gent, J. & Co., Faraday Works, King Richard's-  
road, Leicester. *See index to advertisers.*

Great Western Electric Light & Power Co.,  
Limited, 4, Great Winchester-street-buildings,

London, E.C.

GRIFFITH & CO., 4, Queen Anne's-gate,  
London, S.W. Works, Reading. *See index to*

*advertisers.*

Groth, L. A., 30, Finsbury-pavement, London,  
E.C.

Gulcher Electric Light & Power Co., Limited,  
4, Coleman-st., London, E.C.

Hammond Electric Light & Power Co., 110,  
Cannon-st., London, E.C.

HENLEY'S, W. T., TELEGRAPH WORKS  
CO., LIMITED, office, 8, Drapers'-gardens,

London, E.C. *See index to advertisers.*

Indian & Oriental Electrical Storage & Works  
Co., Limited, 19, Great Winchester-st., Lon-

don, E.C.

INTERNATIONAL ELECTRIC CO., 4, Copt-  
hall-buildings, London, E.C.

Jablochkoff Electric Light & Power Co., Limited,  
1 & 2, Gt. Winchester-st., London, E.C.

Johnson & Phillips, 14, Union-court, Old Broad-  
st., London, E.C., & Victoria Works, Charlton,

London, S.E. *See index to advertisers.*

Laing, Wharton & Down, 8 & 9, Holborn-via-  
duct, London, E.C. *See index to advertisers.*

Lyons Electrical Power Storage Co., Mansion  
House-chambers, 11, Queen Victoria-street,

London, E.C.

Manchester & District Edison Electric Light Co.,  
Limited, 19, Victoria-buildings, Manchester.

Markland Electric Lighting, Power & Regulator  
Co., Limited, 8, Tokenhouse-yard, London,

E.C.

Maxim Weston Electric Co., Limited, 47, Cannon-  
st., London, E.C.

METROPOLITAN (BRUSH) ELECTRIC  
LIGHT & POWER CO., LIMITED, 110,

Cannon-st., London, E.C.

National Co. for the Distribution of Electricity  
by Secondary Generators, Limited, 18, War-

wick-st., Regent-st., London, W.

NORMAN & SONS, 217 to 223, Argyle-street,  
Glasgow, and at Barrow-in-Furness.

## Contractors—Electric Light—continued.

PATERSON & COOPER, 76, Little Britain, London, E.C. *See index to advertisers.*

"PILSEN," "JOEL," & GENERAL ELECTRIC LIGHT CO., LIMITED, St. Stephen's-chambers, Telegraph-st., London, E.C. *See index to advertisers.*

Provincial "Brush" Electric Light & Power Co., Limited, 110, Cannon-st., London, E.C.

REID BROS., 12, Wharf-road, City-road, London, N. *See index to advertisers.*

River Plate Telephone & Electric Light Co., Limited, 34, Walbrook, London, E.C.

Rogers, F. M., 21, Finsbury-pavement, London, E.C.

Rowan, F. J., 134, St. Vincent-st., Glasgow.

SHIPPEY BROS., 13 & 14, King-st., Cheapside, London, E.C., Electrical Engineers and Light Contractors. Sole Manufacturers of the Universal Incandescent Glow Lamps, the Simplex Dynamo Machines and Arc Lamps. *See index to advertisers.*

SIEMENS BROS. & CO., 12, Queen Anne's-gate, Westminster, London, S.W.

SNELL & GLENDENING, St. Paul's-buildings, 21, Paternoster-row, London, E.C. *See index to advertisers.*

South African Brush Electric Light & Power Co., Limited, 5, Cophthall-st., London, E.C.

South Eastern (Brush) Electric Light & Power Co., Limited, 110, Cannon-st., London, E.C.

Spence, J. Berger & Co., 31, Lombard-street, London, E.C. *See index to advertisers.*

Standard Fyfe-Main Electric Lighting Co., Back-lane, Brixton, London, S.W.

Stuart Electric Light & Power Co., Limited, 11, Queen Victoria-st., London, E.C.

Union Electric Light & Power Co., Limited, 2, Cophthall-buildings, Throgmorton-st., London, E.C.

UNIVERSAL ELECTRIC LIGHT CO., Frank Shippey, Sec., 13 & 14, King-st., Cheapside, London, E.C. Manufacturers of the D.P. Storage Batteries, &c., &c., Thermopiles, &c., &c., works, 31, Charles-st., Hatton-garden, London, E.C.

UNIVERSAL INVENTORS & PATENTEES FINANCIAL COMPANY, LIMITED, 30, Finsbury-pavement, London, E.C. undertakes all kind of electric lighting on an entirely new principle, the same as is now used in the consumption of gas, i.e., on the quantity only of electricity used, or on the fire system, with the option of purchasing the plant after a fair trial has been made. Private houses, works, shops, carriages, &c., &c., will be supplied with electric light free from danger and without any kind of machinery at a trifling cost. Correspondence invited.

Varley Patents Proprietary Co., Limited, Millmay Park Works, Ball's-pond, London, N.

Walker, Sidney F., & Oliver, 125, Seven-road, Camelford, and at Nottingham.

Wooden & Irish, 30, Dorough-road, Sunderland.

## Contractors—Electric Light—continued.

West Middlesex Electric Lighting Co., Ltd., 14, King-street-west, Hammersmith, L.W.

Whalley, A., 71, Fleming-square, Blackburn. WOLVERHAMPTON ELECTRIC LIGHT STORAGE & ENGINEERING CO. (T. Packer & P. Bedford Elwell), Commercial Works, Wolverhampton.

WOODHOUSE & RAWSON, 11, Queen Victoria-street, London, E.C., contractors in trade. Estimates given for every class of work. *See index to advertisers.*

## Contractors. Telegraph.

F.—Telegraphes (Entrepreneurs de).

G.—Telegraphenbau Contractoren.

Apps, A., 433, Strand, W.C.

Bailey, W. H. & Co., Essex-street, Manchester.

Bethell, J., & Co., 179, Regent-rd., Liverpool. Clegg & Shaw, 10A, Victoria-buildings, Victoria-st., Manchester.

CLARK L., MUIRHEAD & CO., 23, Regent-st., Westminster, London, S.W.

Davis, J. & Co., 61, Tyrell-st., Bradford.

FOX, EDWIN & CO., LIMITED, 5, 6 & 7, Winchester-st., E.C. Works: Mill Lane, E.

Francis & Co., F. R. Francis, C.E., Manchester. Eagle Telegraph Works, Hatton Garden, London, E.C., and Lawford-road, London.

Fuller, John Crisp & Son, 347, Old Ford Road, London, E.

Garnham & Co., Sash-court, Wilson-st., Finsbury, London, E.C. *See index to advertisers.*

Gent, J. T., & Co., Faraday Works, Richard's-rd., Lancaster. *See index to advertisers.*

Graham, D. & G., 267, Southwell-st., Glasgow.

GRIFFITH & CO., 4, Queen Anne's-gate, London, S.W., Works, Reading. *See index to advertisers.*

HENLEY'S W. T. TELEGRAPH WORKS CO., LIMITED, 8, Drapers'-garden, London, E.C. *See index to advertisers.*

India Rubber, Gutta Percha, & Telegraph Works Co., Ltd., 100, Cannon-st., London, E.C.

Iron Wire, Wire Rope, & Lifting Co., 2, 1 & 2, corner, Westminster, London, S.W.

Johnson Bros., Phoenix Works, Dudley.

Johnson & Phillips, 14, Union-st., Old Broad-st., London, E.C., and Victoria Works, Chelmsford. *See index to advertisers.*

JOHNSON, R. & NEPHEW, 8, St. Windham-st., London, E.C.

Lewis J. Slater, 28, Hanilton-st., Birkenhead, Cheshire.

Radcliffe, A. H. W., 5, Carr's-lane, Birmingham.

Ramsden, Carr & Co., Brighams, York. London office, 72, King William-st., London, E.C.

REID BROS., 12, Wharf-rd., City-rd., London, N. *See index to advertisers.*

**ctors—Telegraph—continued.**

G. F., 5, Great Winchester-st., London,

D. & Co., 2, Poet's-corner, Westminster,  
n, S.W.

ULIUS, 108, Gt. Russell-st., Blooms-  
and Bedford Telegraph Works, Store-  
edford-sq., London, W.C.

Bros. & Co., 12, Queen Anne's-gate,  
n, S.W.

James E. & Samuel, 3, Queen-street-  
and Cannon-street, London, E.C.

Jno., Neal-st., Spon-la., W. Bromwich.  
on, Reynolds, & Co., Castle Works,  
arhampton.

Co., Ashwin-st., Dalston-junction, E.  
Patents Proprietary Co., Limited, Mild-  
ark Works, Balls Pond, London, N.

Sidney F., & Oliver, 195, Severn-road,  
f, and at Nottingham.

& Irish, 30, Borough-road, Sunderland.

**Contractors, Telephone.**

*F.—Telephones (Entrepreneurs de).*

*G.—Telephonen—Contractoren.*

Shaw, 10A, Victoria-buildings, Victoria-  
anchester. *See index to advertisers.*

ated Telephone Construction & Main-  
e Co., Limited, 109, Farringdon-road,  
n, E.C.

., & Son, All Saints' Works, Derby.  
, George, 8, Victoria-st., Shaw Heath,  
ort.

. T. & Co., Faraday Works, King  
d's-road, Leicester. *See index to ad-  
rs.*

Y'S (W. & T.) TELEGRAPH WORKS  
LIMITED, Offices, 8, Drapers'-gardens,  
n, E.C. *See index to advertisers.*

ohn, Nelson-st., Swansea.

. C., 140, Douglas-st., Glasgow.

Telephone Co., 3, Bottle-lane, Not'ham.  
ge's Telephone Co., Ltd., 20, Bucklers-  
London, E.C.

J. Berger & Co., 31, Lombard-st., Lon-  
.C. *See index to advertisers.*

R, SONS, & Co., New Station-road,  
ld.

ie Company of Ireland, Limited, Com-  
l-buildings, Dublin.

Sydney F., & Oliver, 195, Severn-road,  
f, and at Nottingham.

ON & IRISH, 30, Borough-rd., Sunder-

use & Rawson, 11, Queen Victoria-street,  
n, E.C.

**er Companies and Merchants.**

*F.—Cuivre (Compagnies de).*

*G.—Kupfergießerei und Händler.*

ILL, JOHN & SONS, 28, Pickford-st.,  
gham.

**Copper Companies & Merchants—continued.**

BLEWS, WILLIAM & SONS, 9 to 15, New  
Bartholomew-st., Birmingham; Dom Molt-  
shanoff Negliuny, Moscow; and 38, West  
Smithfield, London, E.C., contractors to the  
cities of Moscow, Mexico, San Paulo, &c. Gas  
Companies. (Established 1782.)

Clegg & Shaw, 10A, Victoria-buildings, Victoria-  
st., Manchester.

Grenfell, Pascoe & Sons, 14, Novia Scotia,  
Liverpool, and Middle & Upper Bank Copper  
Works, Swansea.

Smith, J. & Son, 18, 23 & 24, St. John's-square,  
London, E.C.

Stanton Bros., 73, Shoe-lane, London, E.C.  
Refined copper plates for electrotypers.

Vivian, H. H. & Co., 46, George-st., Parade,  
Birmingham.

**\* Copper Smelters and Refiners.**

*F.—Cuivre (Raffineurs de).*

*G.—Kupfer-giessereien.*

Bolton, T. & Sons, Mersey Copper Works,  
Widnes, Cheadle, and Birmingham.

Lees & Saunders, 5, Warstone-lane, Birmingham.

M'Crindell, Schaw & Co., 180, West George-st.,  
Glasgow.

Williams, William, Thistle-st., Hebburn New  
Town, Newcastle-on-Tyne.

**Copper Tape Manufacturers, for Elec-  
trical Purposes.**

*F.—*

*G.—*

Clifford, C. & Son, Fazeley-st., Birmingham.

CUTTING, R. C. & Co., Wardrobe-chambers,  
Queen Victoria-st., London, E.C.

Glover, W. T. & Co. Chief office: 25, Booth-  
st., Manchester. London office: 28, Budge-  
row, E.C. Glasgow office: 85, Buchanan-  
st. *See index to advertisers.*

**\* Copperas Manufacturers.**

*F.—Couperose (Fab. de.).*

*G.—Eisenvitriol.*

Lawson, Jas. Coldwell, 38, Quayside, Newcastle.

**\* Coppersmiths & Braziers.**

*F.—Fondeurs en Cuivre et Bronze.*

*G.—Kupferschmiede und Gürtler.*

Benham & Foud, Chandos Metal Works, 40, 41,  
and 42, Chandos-st., Strand, W.C.

BLEWS, WILLIAM & SONS, 9 to 15, New  
Bartholomew-st., Birmingham; Dom Molt-  
shanoff Negliuny, Moscow; and 38, West  
Smithfield, London, E.C. Contractors to the  
Cities of Moscow, Mexico, San Paulo, &c. Gas  
Companies. (Established 1782.)

OWEN, SAML., & Co., 22, Whitefriars-street,  
London, E.C.

VULCAN MANUFACTURING CO., Vulcan  
Works, Roccliffe-street, City Garden-row,  
London, N. *See index to advertisers.*

**Battery Jar Manufacturers—continued.**

- LEVY, ARMAND, Electrical Sundriesman, 252, Goswell-road, London, E.C., and 42, Rue de Ruysbroeck, Brussels. Leclanché, Daniel, Oatland, Maiche, Mary-Davy sulphate of lead, Bunsen's bi-chromate, carbon plates, terminals, rings, etc., etc. Sole proprietor for the United Kingdom of the celebrated Trouvé Battery, by means of which the problem of domestic lighting is now solved. Ask for special pamphlet. *See index to advertisers.*
- MALING, C. T., Ford Pottery, Newcastle-on-Tyne. London Sample Rooms, 20, Bartlett's-buildings, Holborn-circus, London, E.C. *See index to advertisers.*
- PRICE, SONS & CO., The Old Stoneware Potteries, Bristol. *See index to advertisers.*
- STIFF, JAMES & SONS, London Pottery, Lambeth, S.E. (Established 1751.) *See index to advertisers.*
- TAYLOR, TUNNICLIFF & CO., 9, Bartlett's-buildings, Holborn, London, E.C. *See index to advertisers.*
- Winter, F., 138, London Wall, London, E.C.
- WOOD, WILLIAM, & CO., Albert-st. Works, Burslem.

**Battery Manufacturers.**

*F.—Piles Electriques (Fab. de).*

*G.—Electrische Batterien.*

- André, G. G., Dorking, Surrey.
- Apps, A., 433, Strand, London, W.C.
- Baughan, W. H. & Co., Charlbury, Oxon. (To the Trade only.)
- Becker, F. E. & Co., 34, Maiden-lane, Covent-garden, London, W.C.
- Berry, F. H., 18, Percival-street, Clerkenwell, London, E.C.
- Blakey, Emmott & Co., Northern Telegraph Works, Halifax, and 55 & 56, Southampton-buildings, Chancery-lane, London, W.C. *See index to advertisers.*
- Boland, W., 1, Caroline-st., Birmingham.
- CADIOT, E. H., 6, Lime-street, London, E.C. (Callaud's Battery.) *See index to advertisers.*
- Carlyle, W. A., 91 and 92, Constitution-hill, Birmingham.
- Clark, J., 43, Renfield-st., Glasgow.
- Coxeter, J. & Son. Only Prize Medal awarded specially for Medical Electricity, Paris, 1881, and Crystal Palace, Sydenham, 1882. 23 & 24, Grafton-street East, Tottenham Court-road, London, W.C.
- Dale, H. & E. J., 4, Little Britain, London, E.C., & 26, Ludgate-hill, London, E.C.
- DARLOW & CO., 443, Strand, London, W.C.
- Didier, A., 10, Berkeley-gardens, Camden-hill, Kensington, London, W.
- Economical Electric Supply Association, Churson Works, Wood-green, London, N.
- Electric Company, Limited, Adelphi Electric Works, Adelphi-ter., London, W.C.
- Electric Portable Battery and Gas Igniting Co., 7, Queen Victoria-st., London, E.C.

**Battery Manufacturers—continued.**

- Electro-Dynamic Co. of Philadelphia (Heap, general agent), Scott's-yard, Bus London, E.C. *See index to advertisers.*
- Fearns, Francis H. & Co., Trafalgar Wor Kent-road, London, S.E.
- Francis & Co. (F. R. Francis, C.E., ma Eagle Telegraph Works, Hatton-London, E.C., & Lawford-rd., London. Garnham & Co., Sash-court, Wilson-st., I. E.C. *See index to advertisers.*
- GARRETT, BENJAMIN COPSON, 16 bury-square, London, E.C.
- General Electric Apparatus Co., 29, manbury, London, E.C. Makers of the Portable Silver Battery.
- Gent, J. T., & Co., Faraday Works, Richard's-road, Leicester.
- Gray Brothers, 23, West-street, Gatesh Tyne.
- Kinetic Engineering Co., 7, Wardrobe Doctors'-commons, London, E.C.
- Koorber, J. A., 44, Frith-street, Soho-London, W.
- LEVY, ARMAND, 252, Goswell-rd., I. E.C., and 42, Rue de Ruysbroeck, B Electrical sundriesman. Medical ba Sole agent for Trouve's photophore elec of which the medical press of all cu have spoken so advantageously. *See i advertisers.*
- Maggregor & Higgs, 20, George-st., Edin
- Morris Brothers, Hartington-building, Br street, Birmingham.
- Morris, Timothy, 3 & 4, Market-street. Medical Battery Manufacturers, Galva & Electricians.
- Parke, F., 132, Burton-road, Derby.
- Rapieff, John, Hurst Lodge, Hudley Barnet, Herts.
- Richardson, T. R., 1, South-ter., Lond Derby.
- Schoth, G. A., 232, Euston-road, London
- Spence, J. Berger & Co., 31, Lombard London, E.C.
- Thompson, R., 5, Devonshire-square, F gate-street Without, London, E.
- Toynbee, E., 18, Malvern-villa, Willeeden
- Tyer, G. & Co., Ashwin-st., Dalston J London, E.
- Vulcan Manufacturing Co., Vulcan Work cliffe-street, City-garden-row, London
- Whalley, A., 71, Fleming-square, Black
- WHITING, HENRY G., A.P.S. & M.S Poultry-chambers, London, E.C.

**Bell Founders—Electric.**

*F.—*

*G.—Glocken-gieserei.*

- BLEWS, WILLIAM, & SONS (Est 1782), 9 to 15, New Bartholomew-m mingham; Dom Moltshanoff, Negliun cow, and 38, West Smithfield, Lond Contractors to the Cities of Moscow, San Paulo, &c. Gas Companies.



**Bell Hanging Engineers.**

*F.—Poseurs de Sonnettes.*  
*—Ingenieure für Elektrische-Glocken.*

WILLIAM & SONS (Established 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliuny, Moscow and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, Sao Paulo, &c. Gas Companies.

**Bromate of Potash Makers.**

al Electric Supply Association, Churson, Wood Green, London, N.

**Bismuth Merchants.**

*F.—Bismuth (Marchands de).*  
*G.—Bismuth-Händler.*  
 Matthey & Co., 74 to 80, Hatton-gar-  
 ondon, E.C.

**Blacklead Manufacturers.**

*F.—Graphite (Fab. de).*  
*G.—Reisblei.*  
 use, Jas. C., Soho Works, Wakefield.

**& Nut Manufacturers for Elec-  
 cal & Telegraphic Purposes.**

*F.—Boulons et écrous.*  
*—Bolzen- und Schrauben-Fabriken.*  
 ALL, WILLIAM, Hockley Bolt and  
 Works, Brookfield-street, Birmingham.  
 tor Arm, Shackle, and all kinds of Bolts,  
 Screws, &c.

, WILLIAM & SONS (Established 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliuny, Moscow and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, Sao Paulo, &c. Gas Companies.

ARMAND, 252, Goswell-rd., London, and 42, Rue de Ruysbrœck, Brussels. Uses of screws, terminals and couplings. Agent for Barrière & Co., Paris. Screw machines, brass and iron draw rods, &c. Slater, 28, Hamilton-st., Birkenhead; Helsby.

**Brass & Copper Founders.**

*F.—Fondeurs de Bronze et Cuivre.*  
*—Messing- und Kupfer-Giessereien.*  
 RONG, STEVENS & CO., 15, Whittall-Birmingham.  
 Charles H., 59, Skinner-la., Birmingham, acturer of general and cabinet brass ry.  
 W. H. & Co., Albion Works, Essex-st., d, Manchester.

**\* Brass & Copper Founders—continued.**

BARRETT, R. & SON, Beech-st., Barbican, London, E.C.  
 Baughan, W. H., & Co., Charlbury, Oxon.  
 Economical Electric Supply Association, Churson Works, Wood-green, London, N.  
 BLEWS, WILLIAM & SONS (Established 1782), 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractor to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies.  
 Clark, A. & Co., Buchanan-street, Glasgow.  
 Dale, R. F. & Co., Bear-lane, Southwark, London, S.E.  
 Evered, Richard & Co., Limited, Surrey Works, Smethwick, Birmingham.  
 Forrest & Son, 23, New-street-square, London, E.C.  
 Glyden, Geo., 40 & 41, Oozels-st., Birmingham.  
 Hart, Son, Peard & Co., 53, Wych-st., Strand, London, W.C.  
 Osborne & Co., 11, Great Garden-st., White-chapel-road, London, E. See index to advertisers.  
 PHOSPHOR BRONZE CO., LIMITED, 87, Sumner-street, Southwark, London, S.E., wire and sheet mills, Bagot-street, Birmingham. Sole makers, under patents, of phosphor bronze and silicium bronze.  
 Smith & Chamberlain, 3 to 6 New Bartholomew-st., and 120, New Canal-street, Birmingham.  
 Smith, John & Sons, 18, 23, & 24, St John's-square, London, E.C.  
 Spencer, James E. & Samuel, 3, Queen-street-placo, London, E.C.  
 THURKLE & Co., 5, Denmark-street, Soho, London, W.  
 Watson, Arch & Co., 36, George-st., Glasgow.  
 Winfield, R. W. & Co., 47, Holborn-viaduct, London, E.C.

**Brass Finishers.**

*F.*  
*G.*

Bainbridge, Wm., Middlegate-st., Hartlepool.  
 Baughan, W. H. & Co., Charlbury, Oxon.  
 Benham & Froud, Chandos Metal Works, 40, 41 and 42, Chandos-st., Strand, W.C.  
 BLEWS, WILLIAM & SONS, 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. (Established 1782).  
 BURLEY, WILLIAM, Tower-chambers, London Wall, London, E.C.  
 Bush, J., Curzon-street, Derby.  
 Moss, W., 7, Warser-gate, Northumberland-street, Nottingham.  
 Murdy, Geo., 55, Church-gate, Leicester.  
 Nickhols, John, 103, New North-rd., London, N.  
 Smith, J., Traffic-street, Derby.

**Brass Finishers—continued.**

Snell & Glendening, St. Paul's-buildings, 21, Paternoster-row, London, E.C.  
Thew, Thos., 112, High-st.-east, Sunderland.  
Webster, J., Traffic-street, Derby.

**Brass Manufacturers.**

*F.—Bronze (Usines de).*

*G.—Messing-Former.*

BLEWS, WILLIAM & SONS, 9 to 15, New Bartholomew-st., Birmingham; Dom Moltschanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. (Established 1782.)  
Faraday & Son, 3, Berners-st., Oxford-st., London, W.  
LEVY, ARMAND, 252, Goswell-rd., London, E.C., and 42, Rue de Ruysbroeck, Brussels. Importer of French brass rods, plain and drawn, to any pattern.

**Brass Masters and Merchants.**

*F.—Bronze (Usines de).*

*G.—Messing-Former.*

BARWELL, JOHN & SONS, 28, Pickford-street, Birmingham.  
BLEWS, WILLIAM & SONS, 9 to 15, New Bartholomew-st., Birmingham; Dom Moltschanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. (Established 1782.)  
BOLTON, T. & SONS, Broad-street, Birmingham, and Oakamoor, Cheadle, Staffordshire.  
Bossomaier & Co., 72, Finsbury-pavement, London, E.C.  
Clifford, C. & Son, Rolling Mills, Fazeley-street, Birmingham.  
Elliott's Metal Company, Limited, Selly Oak Works, Birmingham.  
Hall Street Metal Rolling Co. (J. Bisseker, manager), Hall-street Works, Birmingham.  
Heaton & Dugard, 77 to 80, Lower Loveday-street, Birmingham.  
ORMISTON & CO., 25, Old-st., London, E.C.  
Owen Arthur, 121, Shadwell High-st., London, E.  
Smith Brothers & Co., Hyson Green Works, Hyson-green, Nottingham.  
Smith, John & Sons, 18, 23, & 24, St. John's-square, London, E.C.

**\* Brimstone Refiners.**

*F.—Fleur de Soufre.*

*G.—Schwefel-Sieder.*

Scott, W. T. & Co., Marsh-gate-lane, Stratford, London, E.

**Bronze Founders and Manufact**

*F.—*

*G.—*

OSBORNE & CO., 11, Gt. Garden-st., chapel-rd., London, E. *See index to ad*

**\* Bronzists.**

*F.—Bronzeurs.*

*G.—Bronzisten.*

BLEWS, WILLIAM & SONS, 9, to Bartholomew-st., Birmingham; Dom hanoff, Negliuny, Moscow, and 38 Smithfield, London, E.C. Contractors Cities of Moscow, Mexico, San Paulo, Companies.  
BLUMBERG & CO., 2, Cannon-street, 1 E.C.  
PERRY & CO., 72, New Bond-st., Lond  
Sutcliffe, Isherwood, 27, Great Hamptor Birmingham.

**Cable Manufacturers.**

*F.—Cables Télégraphiques.*

*G.—Kabel-Fabriken.*

Apps, A., 433, Strand, London, W.C.  
Bullivant & Co., 72, Mark-lane, London,  
CLARK L., MUIRHEAD & CO., 23, R street, London, S.W.  
Clegg & Shaw, 10A, Victoria-buildings, V st., Manchester. *See index to advertiser*  
Dixon, Corbitt & Spencer, 26, Commerce London, E.  
Felten & Guillaume (W. F. Dennis agents), 101, Leadenhall-street, London *See index to advertisers.*  
FOX, EDWIN & CO., LIMITED. 5, Gt. Winchester-street, London, E.C. Millwall, London, E.  
Francis & Co. (F. R. Francis, C.E., ma Eagle Telegraph Works, Hatton-London, E.C., & Lawford-road, London  
Glover, W. T. & Co. Chief Office: 25, street, Manchester, London Office: 28. row, London, E.C. Glasgow Office Buchanan-street. *See index to advertian*  
HENLEY'S, W. T., Telegraph Works Co 8, Drapers'-gardens, Throgmorton London, E.C. *See index to advertisers.*  
India Rubber, Gutta Percha & Telegraph Co., Limited, 106, Cannon-st., London,  
Johnson & Phillips, 14, Union-court, Old street, London, E.C., and Victoria Charlton, London, S.E. *See index to adri*  
Kinetic Engineering Co., 1, Wardrobe Doctor's Commons, London, E.C.  
LEVY, ARMAND, 252, Goswell-rd., 1 E.C., and 42, Rue de Ruysbroeck, B Cables and wires to any specification *index to advertisers.*  
LONDON & DERBY ELECTRIC WIR LTD., Fore-st., London, E.C. *See i advertisers.*

**Manufacturers—continued.**

**ELECTRIC WIRE CO.**, Anchor Playhouse-yard, E.C. Late of Wendings, Ironmonger-row, Old-street, E.C. *See index to advertisers.*

**ros.**, Lea Telegraph Works, Hackney. (Late of Mackintosh-lane, Homerton, E.) *See index to advertisers.*

**, 12, Wharf-rd., City-rd., London, N.** William, Ashbourne-road Mills, Derby. agent: Edwin Holloway, 2, Gutterndon, E.C. *See index to advertisers.*

**F., 5, Gt. Winchester-st, London, E.C.** **ros. & Co., Ltd.**, 12, Queen Anne's-estminster, London, S.W. Telegraph ne Cables.

**Manufacturing Co.**, Vulcan Works, street, City Garden-row, London, N. *to advertisers.*

**Electric Co.**, 59, Moorgate-street, E.C.

**Weatherley**, 39, Wapping High-street, E.

**e & Rawson**, 11, Queen Victoria-street, London. Ordinary cable kept in stock. *to advertisers.*

**Carbon Manufacturers.**

*F.—Charbons Electriques.*

*G.—Holzkohlen-Brennereien.*

**433, Strand, London, W.C.**

**, R., 11, Queen Victoria-street, E.C.** *See index to advertisers.*

**Carbon Co. Works**: Webber-street, London, S.E.

**Carbon Company**, Barnsley, Yorkshire.

**E. & Co.**, 34, Maiden-lane, Covent-London, W.C.

**, James W.**, 2, Carlisle-street, Soho-London, W.

**ght Carbon Co.**, 133A, Great Suffolk-ough, London, S.E. Every descrip-carbons for Electrical purposes. *See advertisers.*

**ighting Supply & Fitting Co., Ltd.** id Works: 28, York-street, West-London, S.W. (Manager, W. Bridges *See index to advertisers.*

**Co.** (F. R. Francis, C.E., Manager), egraph Works, Hatton-garden, E.C., ford-road, London, N.W.

**F. & Co.**, Long-lane, Smithfield, E.C. *See index to advertisers.*

**i & PHILLIPS**, 14, Union-court, Old., London, E.C.; & Victoria Works, , S.E. *See index to advertisers.*

**ngineering Co.**, 1, Wardrobe-place, Commons, London, E.C.

**Carbon Manufacturers—continued.**

**LEVY, ARMAND**, 252, Goswell-rd., London, E.C., and 42, Rue de Ruysbroeck, Brussels. Electrical sundriesman. Stock kept of various classes of carbons, plates, rods and cylinders for all classes of electrical and medical batteries. Carbons moulded to any sketch. Any class of special battery carbons built. Sole maker of the carbonized asbestos, giving a surface not to be obtained by any other means. *See index to advertisers.*

**LIEPMANN CARBON CO, LTD.**, Nelson Wharf, Millwall, London, E. Manufacturers of the Liepmann Carbon Rods (pure, uniform, dense), Battery Plates, Filaments, &c. *See index to advertisers.*

**WOODHOUSE & RAWSON**, 11, Queen Victoria-st., London, E.C. Pencils and Plates in stock. Supplies contracted for, tests made.

**Case Makers.**

*F.—*

*F.—*

**YOUNG, FREDERICK & CO.**, 11, Clerkenwell-green, London, E.C. *See index to advertisers.*

**Chandelier, Lustre, Glass and Brass Makers for all Electrical purposes.**

*F.—*

*G.—*

**BLEWS, WILLIAM & SONS**, 9 to 15, New Bartholomew-st., Birmingham; Dom Moltschanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. (Established 1872).

**Charcoal Makers and Dealers.**

*F.—Charbon de bois.*

*G.—Meiler und Holzkohlen-Händler.*

**Lancaster, Edwin & Son**, 27, Rockingham-street, London, S.E.

**Scott, R. & Co.**, Marsh-gate-lane, Stratford, London, E.

**Chemical Appliance Manufacturers.**

*F.—Appareils de Chimie.*

*G.—Chemische Apparate.*

**Apps, A.**, 433, Strand, London, W.C.

**Hart, F. W.**, 8 & 9, Kingsland-green, London, E.

**How, James & Co.**, 73, Farringdon-st., London, E.C.

**Mottershead & Co.**, 7, Exchange-st., Manchester.

**ORME & CO.**, 65, Barbican, London, E.C.

**Chemical Glass and Apparatus  
Manufacturers.**

*F.—Verrerie de Chimie.*

*G.—Chemisches Glas.*

- Bachhoffner, Charles, St. Andrew's-bdgs., St. Andrew's-st. London, E.C.  
Baird & Tatlock, 100, Sauchiehall-st., Glasgow.  
BECKER, F. E. & CO., 34, Maiden-lane, Covent-garden, London, W.C.  
Brayne, Francis & Co., Three Mills-lane, Bromley-by-Bow, E.  
Cubley & Preston, 4, High-st., Sheffield.  
DOULTON & CO., 28, High-st., Lambeth, London, S.E.  
Griffin, John J., & Sons, 22, Garrick-st., London, W.C.  
Gritton, W. H. & Sons, Holland-st., London, S.E.  
HOUGHTON, G., & SON, 89, High Holborn, London, W.C.  
Mace & Haldane, 77 & 78, Milton-st., Cripple-gate, London, E.C.  
May, Roberts & Co., 9, Clerkenwell-road, London, E.C.  
Oakley, Walter Henry, 202, Grange-rd., London, S.E.  
Pothe, H. & Co., 4, Sugarloaf-court, Leadenhall-st., London, E.C.  
Powell, Samuel, 57, Newcomen-street, Borough, London, S.E.  
Ruels & Co., 28, Goldhawk-road, Shepherd's-bush, London, W.  
Shea, John, 184, Cator-st., Peckham, S.E.  
Smith, Thomas & Co., Verney-road, Old Kent-road, London, S.E.  
STIFF, J., & SONS, High-st., Lambeth, S.E.  
Retorts, receivers, store jars, plumbago and clay crucibles, porous cells, cylinders, plates, stoneware, insulators, and all other pottery for Electric and Telegraph work. Prize Medal.

**Chemists—Analytical.**

*F.—Chimistes Analytiques.*

*G.—Analytikerer.*

- Attfield, Professor John, F.R.S., 17, Bloomsbury-square, London, W.C.  
Bamber, Hy. K., 5, Westminster-chambers, London, S.W.  
Bannister, Richard, The Laboratory, Somerset-house, London, W.C.  
Bell, Hy. Stowe, F.C.S., 46, High-st., Sheffield.  
Bischof, Gustav., 4, Hart-st., Bloomsbury, London, W.C.  
Bland, J. H., & Co., 75, Blackfriars-rd., London, S.E., and 27, Kirby-st., Hatton-garden, London, E.C.  
BURGHARDT, DR. CHARLES, A., 110, King-st., Manchester, and Victoria University, Owen's College, Manchester (specialities in damaged india rubber goods.)  
Burgoyne, Burbidges, Cyriax & Farries, 16, Coleman-st, London, E.C.

**Chemists—Analytical—continued.**

- Cameron, M. J., 52, Lime-st., London, E.C.  
Carpenter, H. S., 32, Holborn-viaduct, London, E.C.  
Claudet, F., 6 & 7, Coleman-st., London  
Cleaver, Edward Lawrance, 289A, King's Road, Chelsea, London, S.W.  
Cooper, W. John, 7, Westminster-chambers, London, S.W.  
Cownley, Alf. John, F.I.C., F.C.S., 1, Church-avenue, London, E.C.  
Cripps, Joseph, 27, New Broad-st., London  
Cross, Chas. Samuel, 606, Old Ford-road, London, E.  
Duprè, Auguste, Ph.D., F.R.S., F.C.S., 1, Brook-gardens, Kensington, London, W.  
DYER, BERNARD, F.C.S., F.I.C., 1, Tower-st., London, E.C.  
Edger, A. J. M., 13, Dean-st., Newcastle  
Foster, Professor Wm., M.A., F.C.S., Middlesex Hospital, Berners-st., London  
Gerland, B. W., 124, Buxton-rd., Macclesfield  
Gore, G., LL.D., F.R.S., 67, Broad-st., London  
Harkness, Wm., Laboratory, Somerset-house, London, W.C.  
Harris, Hy. Penley, F.C.S., 14, Bucking-ham Palace-road, London, S.W.  
Hobson, A. H., F.R.M.S., 17, Regent-st., London, S.W.  
Horn, William, P. 21A, Broad-st., Birmingham  
Hughes, John, F.C.S., 79, Mark-lane, London, E.C.  
Jackson, Edgar, 106, Queen Victoria-street, London, E.C.  
Johnson, Matthey & Co., 74 to 80 Hatfield-st., London, E.C.  
Jones, E. W. T., F.I.C., F.C.S., 10, Victoria-st., Wolverhampton.  
Kingzett, Chas. T., F.I.C., F.C.S., 2, Lettice-buildings, Three Colt-lane, London, E.  
Lowe, Wm. F., Goss-st., Chester.  
Neilson & Bayne, 173, Fenchurch-st., London, E.C.  
Nesbitt, J. C. & Son, 38, Gracechurch-st., London, E.C.  
Pattinson & Stead, 5, Shetland-rd., Midland  
Pattinson, John, 75, Side, Newcastle.  
Paul, Benjamin Horatio, 1, Victoria-st., Westminster Abbey, London, S.W.  
Penney, D. M., 15, High-st., Hull.  
Price, Astley P., 47, Lincoln's Inn Fields, London, W.C.  
Price, Dr. David S., 26, Great George-street, London, S.W.  
Proctor, William Wilson, 33 & 35, Side Dean-st., Newcastle-on-Tyne.  
Redwood, Dr. Theoph., 17, Bloomsbury-square, London, W.C.  
Rice, R. S., 33, Wharf-st., Leicester.  
Smetham, Alfred, 18, Brunswick-st., London  
Soward, Alfred Walter, 5, Sergeant's Inn, London, E.C.  
Spencer, Thos., 32, Euston-square, London



**ts—Analytical—continued.**

George Naylor, The Laboratory,  
set-house, London, W.C.  
Wm. Hy., F.R.M.S., F.C.S., 2, Queen's  
St. John's Wood, London, N.W.  
ank L., 8, Victoria-chambers, London,  
Augustus, Ph.D., F.R.S., 11, Salis-  
square, London, E.C.  
1, James Alfred, 7, Westminster-  
ers, Victoria-st., London, S.W.  
H., 7, Union-court, Old Broad-street,  
n, E.C.

**emists—Manufacturing and  
Metallurgical.**

*Chimistes Industriels et Métallurgiques.*

*G.—Chemische-Fabriken.*

Shirley (William Kirk, Manager), Nor-  
Killamarsh, Chesterfield.  
& Sons, 164, Upper North-street, Poplar,  
n, E.  
& W., Wallsend, Newcastle.  
Ammonia Co., Ltd., 201, West-st., S.S.,  
w.  
1, G. H., Howden Dyke, Howden.  
ries' Hall, Water-lane, Blackfriars, Lon-  
C.  
., Etruria-vale, Hanley, Stafford.  
Oliver Ross, 3, Canning-st., Calton,  
w.  
Chemical Co., Bashford.  
, W. H., & Co., Charlbury, Oxon.  
noniac, bichromate of potash, manganese.  
Chemical Co., 15, Grey-st., Newcastle.  
W., Lower Turn Lee, Glossop.  
F., Forest Side, Sutton-in-Ashfield.  
W. A., 91 & 92, Constitution-hill,  
ingham. Cyanide of Potassium & Nickle  
  
Chemical Co., Ltd., 42, Mosley-st.,  
stle.  
s & Co., T. F., 51, High-st., Hull.  
1, J. T., 168, Deansgate, Manchester.  
graphic purposes.  
ate Chemical Works, Chestergate,  
ort.  
Nettleships & Bailey, 15, Belvoir-st.,  
ter.  
H. & Son, Porthill, Longport, Stoke-on-  
nt.  
hn, 44, Dean-st., Newcastle.  
& Smith, Catherine-st., Lichfield-rd.,  
ingham.  
c Son, 1A, Charles-st., Leicester.  
: Laird, 41, Candleriggs, Glasgow, and  
kovan-rd., Govan.  
ank, R., 121 & 123, Camden-st., B'ham.  
c Preston, 4, High-st., Sheffield.  
., & Co., Brickhouse-lane, Gt. Bridge,  
Bromwich.  
n Chemical Co., Ltd., 27, St. Vincent-  
Glasgow.

**Chemists—Manufg. & Metallurgical—  
continued.**

Felting, Coal, Iron & Chemical Co., Limited,  
Royal Insurance-buildings, Newcastle.  
Forster & Gregory, Greyhound-lane, Streatham-  
common, London, S.W.  
Frew, John & Co., 120, Mid Wharf, Port Dundas,  
- Glasgow.  
Galen Chemical Company, Ettingshall, Wolver-  
hampton.  
Galloway & Co., Victoria Chemical Works, Pol-  
lockshaws, Glasgow; office, 156, St. Vincent-  
street.  
Gartley, John B., 22, Springfield-ct., Glasgow.  
Gibson & Mathie, 49, Brown-street, Glasgow.  
Hannay, J. B., Annfield Chemical Works,  
Sword-street, Glasgow.  
Hardman, J. M., Stoke-on-Trent.  
Harris, Philip & Co., 9, Bull-ring, Birmingham.  
Harrison, G., Holderness-road, Hull.  
Hart, G. W., Lowry's-wharf, Wilmington-  
groves, Lime-street, Newland.  
Heath, Charles & Co., Ouseburn, Newcastle.  
Hill, James, 288, Argyle-street, Glasgow.  
Holden & Co., Whitehouse, Erdington, B'ham.  
Hunt, W. & Sons, Alkali Works, Leabrook,  
Tipton, Stafford.  
Hurlet & Campsie Alum Co., 115, Wellington-  
street, Glasgow.  
Hyde, J., Higo-street, Wednesfield.  
Jarrow Hill Chemical Co., Lombard-street, New-  
castle.  
Johnson, Matthey & Co., 74 to 80, Hatton-  
garden, E.C.  
Jones, W. & Co., Fleet-road, Middlesbrough.  
Kelvin Chemical Co., Craighall Works, Maryhill.  
Kirk, W., Killamarsh, Chesterfield.  
Litchfield, J., 50, High-street, Longton, Stafford.  
Major, J. C., Monmore-green, Wolverhampton.  
Matthews, Son, & Co., Eastgate, Great Driffield.  
Meggitt, S. & Sons, Sutton-in-Ashfield.  
Montgomery, J. & Co., 18, Bishop-street, Port  
Dundas, Glasgow.  
Morris Bros., Misterton, Gainsbro'.  
Newcastle Chemical Works, Ltd., 4, Quayside,  
Newcastle.  
Orr, J. B., 46, Cannon-street, E.C.  
Phillip, P. & Co., 57, Norfolk-street, Glasgow.  
Priory Chemical Company, Limited, 37, Napier-  
shall-street, Glasgow.  
Reade Bros. & Co., Victoria-st. Works, Monmore  
green, Wolverhampton.  
Richardson, J. & Co., Friar-lane, Leicester.  
Ridyard, W., Oxford-street, Bilston, Stafford.  
Roberts, Dale & Co., St. James'-street, Latch-  
ford, Warrington.  
Robinson, N. E. & Co., 13, Milestone-lane,  
Leicester.  
Sadler, T. A., Cleveland Chemical Works,  
Middlesbrough.  
St. Rollox Chemical Works, 229, Castle-street,  
Glasgow.  
Scott & Co., Marsh-gate-lane, Stratford, E.  
Sharon Chemical Co., Little Chester, Derby.

**Chemists—Manufg. & Metallurgical—**  
*continued.*

Shorthouse, J. & Sons, 65, Shadwell-st., B'ham.  
South Down Metal & Chemical Co., Limited, 8,  
Old Jewry, London, E.C.  
Stevenson, Carlisle & Co., 23, West Nile-street,  
Glasgow.  
Sturge, John & Edmund, 18, Wheelley's-lane,  
Birmingham.  
Tapton Chemical Works, Tapton, Chesterfield.  
Tennant, Chas. & Co., St. Rollox, and 115, St.  
Vincent-street, Glasgow.  
Warburton & Sons, Chemical Works, Worksop.  
Ward, Wm., 71, New-street, West Bromwich.  
Washington Chemical Company, 26, Grey-street,  
Newcastle.  
White, Wm. Henry, Westmore, Long Benton,  
Newcastle.  
Wilkinson, T., 24, Newgate-street, Newcastle.  
Williamson, J. C. & Co., Exchange-buildings,  
Quayside, Newcastle.  
Williamson, J. H., Golden-hill, Stoke-on-Trent.  
Wilson, James Thompson, Spital, Berwick-on-  
Tweed.  
Woolley, James, Sons & Co., 69, Market-street,  
Manchester.  
Young & Strang, 30, Gordon-street, Glasgow.

**Clock Wheel Makers.**

*F.—Roues d'horlogerie.*

*G.—Uhrräder-Fabriken.*

Beard, John, 28, Corporation-row, London, E.C.  
OPPERMANN BROS., Brewhouse-yard, 172, St.  
John's-street, London, E.C. *See index to adver-*  
*tisers.*  
Smith, J. & Sons, 18, St. John's-square, Cler-  
kenwell, London, E.C.

**Clutch Manufacturers.**

*F.—Griffes de transmission.*

*G.—*

Bagshaw, J. & Sons, Batley, Yorkshire. Addy-  
man's American Friction Clutch.  
Hall, C. E., Woodside, Meersbrook Bank,  
Sheffield.  
Walker, Sidney F. & Oliver, 195, Severn-road,  
Cardiff, and at Nottingham.

**Coils—Medical & Intensity.**

*F.—*

*G.—*

Economical Electric Supply Association, Chur-  
son Works, Wood-green, London, N.

**Coil (Wood) Makers for Batteries.**

*F.—*

*G.—*

Franks, Robinson & Co., 76, Milton-st., Fore-  
st., London, E.C. *See index to advertisers.*  
Irvin & Sellers, Preston. *See index to advertisers.*

**\* Compass Adjusters in Iron Ve**

*F.—*

*G.—*

Morrison, Frank, 19, Robertson-st., Glas  
Wiggins, Fredk. & Sons, 10, King-st.,  
hill, London, E.C.

**Compass Centre Maker.**

*F.—*

*G.—*

HOLDSWORTH, SAMUEL, 54, Spei  
Clerkenwell, London, E.C.

**Compass Makers.**

*F.—*

*G.—*

Castle & Pagan, Commercial-road, Hull.  
White, Jas., 241, Sauchiehall-street, Gla

**\* Composition Makers—Boiler 1  
Conducting.**

*F.—Calorifuge (Fab. de).*

*G.—Composition zur Verdichtung der Damp,*  
Leabon & Corfe, Bridge-st. and Ploug  
Homerton, London, E.

Orme, Fredk. & Co., 9, St. Andrew's  
Holborn-viaduct, London, E.C. *See i*  
*advertisers.*

PAYNE & CO., 37, Eastcheap, London, 1  
WALLINGTON, GEO., jun., Frogha  
Warrington.

Wotherspoon, J. & Sons, 97, Welling  
Glasgow.

**\* Composition Makers—for Preve  
Incrustation in Steam Boiler**

*F.—Désincrustants.*

*G.—Composition zur Verhütung des Incrusti*  
*Dampfkessel.*

BARR, ROBERT ("Ehrenbergh"), 94  
India Dock-road, London, E.

Fearns, Francis H. & Co., Trafalgar Wor  
Kent-road, London, S.E.

Hailwood, J. T., Ramsay-street, Rochdale  
LEABON & CORFE, Bridge-st. and 1  
lane, Homerton, London, E.

Orme, Fredk. & Co., 9, St. Andrew's  
Holborn-viaduct, London, E.C. *See i*  
*advertisers.*

Townsend & Young, Wellington-st., All S  
street, Bristol.

**Contractors—Electric Light.**

*F.—Eclairage électrique (Entrepreneurs)*

*G.—Electrisches Licht—Contractoren*

Anderson & Munro, 136, Bothwell-st., 31  
Anglo-American (Brush) Electric Light Co  
tion, Limited, 108, Belvedere-rd., La  
London, S.E.

**ctors—Electric Light—continued.**

Spanish (Brush) Electric Light & Power Limited, 110, Cannon-st., London, E.C.

., 433, Strand, London, W.C.

Asian Electric Light, Power & Storage Limited, 4, Copthall-bldgs., London, E.C.

., Henry, & Co., 131, Hope-st., Glasgow.

S, WILLIAM & SONS (established , 9 to 15, New Bartholomew-st., Birham; Dom Moltshanoff, Negliuny, Mos- and 38, West Smithfield, London, E.C. actors to the Cities of Moscow, Mexico, Paulo, &c. Gas Companies.

Electric Light Co., Limited, offices & , Turk's Head-yd., Turnmill-st., London,

Gold Medal at the Paris Electrical Exhi-, 1881. Gold Medal at the Crystal

e Electrical Exhibition, 1882. Sole ees for the well-known Gramme Electric

ing Machine. Contractors for the supply etric Light on all approved systems.

Electric Light & Power Co. for the el Islands & Isle of Man, Limited,

ishopsgate-st. Within, London, E.C.

Electric Light & Power Co. of Scotland, ed, 9, New Broad-st., London, E.C. (*In ation*).

Midland Electric Light & Power Co., ed, 4, Great Winchester-street-buildings, n, E.C.

J. J. & Co., 154, Westminster-bridge- London, S.E.

Shaw, 10A, Victoria-buildings, Victoria- anchester. *See index to advertisers.*

TON, R. E. & Co., 4, Queen Victoria-st., n, E.C. Contractors to the Swan United ic Light Company. *See index to adrer-*

m-Winfield, Electric Light Associa- Cambridge-street Works, Birmingham, ), Farringdon-street, London, E.C. *See to advertisers.*

ES, J., & SONS, 147, Houndsditch, n, E. *See index to advertisers.*

Bros., 32, Queen Victoria-st., Lon- E.C.

, George, 8, Victoria-street, Shaw-heath, port.

Electric Light & Power Co., Limited, eat Winchester-st., London, E.C.

ic Electric Co., Limited, 9, Soho-sq., n, W.

Indian & Colonial Electric Co., Limited, 6, Throgmorton-avenue, London, E.C.

& Swan Electric Light Co., Limited, 74, an-st., London, E.C.

s, Henry, 2, Victoria Mansions, Victoria- Westminster, London, S.W. *See last page rtisements.*

RIC FINANCE ASSOCIATION, 13 & ing-st., Cheapside, London, E.C. Estab- to financially assist inventors and to p and sell approved inventions. *Arthur y, General Manager.*

**Contractors—Electric Light—continued.**

Electric Lighting Contract & Maintenance Co., Limited, 1, Queen Victoria-st., London, E.C.

Electric Lighting Supply & Fitting Co., office and works, 28, York-st., Westminster, London, S.W. *See index to advertisers.*

Electric Motor Syndicate, Limited, 3, Copthall-buildings, London, E.C.

Electric "Sun" Lamp & Power Co., Limited, St. Margaret's Offices, Victoria-st., Westminster, London, S.W.

Francis & Co. (F. R. Francis, C.E., Manager), Eagle Telegraph Works, Hatton-garden, London, E.C., and Lawford-road, N.W.

French Electrical Power Storage Co., Limited, 71, Queen st., London, E.C.

French Metropolitan General Electric Co., Lmted., 71, Queen-street, London, E.C.

Gent, J. & Co., Faraday Works, King Richard's-road, Leicester. *See index to advertisers.*

Great Western Electric Light & Power Co., Limited, 4, Great Winchester-street-buildings, London, E.C.

GRIFFITH & CO., 4, Queen Anne's-gate, London, S.W. Works, Reading. *See index to advertisers.*

Groth, L. A., 30, Finsbury-pavement, London, E.C.

Gulcher Electric Light & Power Co., Limited, 4, Coleman-st., London, E.C.

Hammond Electric Light & Power Co., 110, Cannon-st., London, E.C.

HENLEY'S, W. T., TELEGRAPH WORKS CO., LIMITED, office, 8, Drapers'-gardens, London, E.C. *See index to advertisers.*

Indian & Oriental Electrical Storage & Works Co., Limited, 19, Great Winchester-st., London, E.C.

INTERNATIONAL ELECTRIC CO., 4, Copt-hall-buildings, London, E.C.

Jablochkoff Electric Light & Power Co., Limited, 1 & 2, Gt. Winchester-st., London, E.C.

Johnson & Phillips, 14, Union-court, Old Broad-st., London, E.C., & Victoria Works, Charlton, London, S.E. *See index to advertisers.*

Laing, Wharton & Down, 8 & 9, Holborn-via-duct, London, E.C. *See index to advertisers.*

Lyons Electrical Power Storage Co., Mansion House-chambers, 11, Queen Victoria-street, London, E.C.

Manchester & District Edison Electric Light Co., Limited, 19, Victoria-buildings, Manchester.

Markland Electric Lighting, Power & Regulator Co., Limited, 8, Tokenhouse-yard, London, E.C.

Maxim Weston Electric Co., Limited, 47, Cannon-st., London, E.C.

METROPOLITAN (BRUSH) ELECTRIC LIGHT & POWER CO., LIMITED, 110, Cannon-st., London, E.C.

National Co. for the Distribution of Electricity by Secondary Generators, Limited, 18, Warwick-st., Regent-st., London, W.

NORMAN & SONS, 217 to 223, Argyle-street, Glasgow, and at Barrow-in-Furness.

# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER

## Contractors—Electric Light—continued.

PATERSON & COOPER, 76, Little Britain, London, E.C. *See index to advertisers.*

"PILSEN," "JOEL," & GENERAL ELECTRIC LIGHT CO., LIMITED, St. Stephen's-chambers, Telegraph-st., London, E.C. *See index to advertisers.*

Provincial "Brush" Electric Light & Power Co., Limited, 110, Cannon-st., London, E.C.

REID BROS., 12, Wharf-road, City-road, London, N. *See index to advertisers.*

River Plate Telephone & Electric Light Co., Limited, 34, Walbrook, London, E.C.

Rogers, F. M., 21, Finsbury-pavement, London, E.C.

Rowan, F. J., 134, St. Vincent-st., Glasgow.

SHIPPEY BROS., 13 & 14, King-st., Cheapside, London, E.C., Electrical Engineers and Light Contractors. Sole Manufacturers of the Universal Incandescent Glow Lamps, the Simplex Dynamo Machines and Arc Lamps. *See index to advertisers.*

SIEMENS BROS. & CO., 12, Queen Anne's-gate, Westminster, London, S.W.

SNELL & GLENDENING, St. Paul's-buildings, 21, Paternoster-row, London, E.C. *See index to advertisers.*

South African Brush Electric Light & Power Co., Limited, 5, Cophall-st., London, E.C.

South Eastern (Brush) Electric Light & Power Co., Limited, 110, Cannon-st., London, E.C.

Spence, J. Berger & Co., 31, Lombard-street, London, E.C. *See index to advertisers.*

Standard Fyfe-Main Electric Lighting Co., Back-lane, Brixton, London, S.W.

Stuart Electric Light & Power Co., Limited, 11, Queen Victoria-st., London, E.C.

Union Electric Light & Power Co., Limited, 2, Cophall-buildings, Throgmorton-st., London, E.C.

UNIVERSAL ELECTRIC LIGHT CO. (Frank Shippey, Sec.), 13 & 14, King-st., Cheapside, London, E.C. Manufacturers of the D.P. Storage Batteries, &c., &c., Thermopiles, &c., &c., works, 31, Charles-st., Hatton-garden, London, E.C.

UNIVERSAL INVENTORS & PATENTEES FINANCIAL COMPANY, LIMITED, 30, Finsbury-pavement, London, E.C. undertakes all kind of electric lighting on an entirely new principle, the same as is now used in the consumption of gas, i.e., on the quantity only of electricity used, or on the low system, with the option of purchasing the power after a fair trial has been made. Private houses, works, shops, carriages, &c., &c. will be supplied with electric light free from danger and without any kind of machinery at a trifling cost. Correspondence invited.

Varley Patents Proprietary Co., Limited, Midway Park Works, Ball's-pond, London, N.

Walker, Sidney F. & Co., Ltd., 115, Severn-road, Cardiff, and at Nottingham.

Wooden & Irish, 30, Borough-road, Sunderland.

## Contractors—Electric Light—continued.

West Middlesex Electric Lighting Co., Ltd., 14, King-street-west, Hammersmith, London, W.

Whalley, A., 71, Fleming-square, Blackburn.  
WOLVERHAMPTON ELECTRIC LIGHT STORAGE & ENGINEERING CO. (The Packer & P. Bedford Elwell), Commercial Road Works, Wolverhampton.

WOODHOUSE & RAWSON, 11, Queen Victoria-street, London, E.C., contractors in trade. Estimates given for every class of work. *See index to advertisers.*

## Contractors, Telegraph.

F.—Telegraphes (Entrepreneurs de).

G.—Telegraphenbau-Contractoren.

Appa, A., 433, Strand, W.C.

Bailey, W. H. & Co., Essex-street, Manchester.

Bethell, J., & Co., 179, Regent-rd., Ladbroke Grove, London, W.  
Clegg & Shaw, 10a, Victoria-buildings, Victoria-st., Manchester.

CLARK L., MUIRHEAD & CO., 23, Regent-st., Westminster, London, S.W.

Davis, J. & Co., 51, Tyrell-st., Bradford.

FOX, EDWIN & CO., LIMITED, Old Broad-st., London, E.C.  
5, 61, Winchester-st., E.C. Works, Mill Lane, London, E.

Francis & Co. F. R. Francis, C.E., Manchester.  
Eagle Telegraph Works, Hatton Garden, London, E.C., and Lawford-road, London, E.

Fuller, John Crisp & Son, 547, Old Ford Road, London, E.

Gardner & Co., South-west, Wilson-st., Lambeth, London, E.C. *See index to advertisers.*

Gent, J. T., & Co., Faraday Works, Richard's-rd., Leicester. *See index to advertisers.*

Graham, D. & Co., 267, Santhall-st., Glasgow.  
GRIFFITH & CO., 4, Queen Anne's-gate, London, S.W., Works, Reading. *See index to advertisers.*

HENLEY'S W. T. TELEGRAPH WORKS CO., LIMITED, 8, Drapers'-garden, London, E.C. *See index to advertisers.*

India Rubber, Gutta Percha, & Telegraph Works Co., Ltd., 100, Cannon-st., London, E.C.

Iron Wire, Wire Rope, & Fencing Co., 2, Elbow-corner, Westminster, London, S.W.

Johnson Bros., Phoenix Works, Dudley.

Johnson & Phillips, 14, Union-st., Old Broad-st., London, E.C., and Victoria Works, Chelsea. *See index to advertisers.*

JOHNSON R. & NEPHEW, 8, 61, Winchester-st., London, E.C.

Lewis, J. Slater, 28, Hamilton-st., Barking, Essex.

Lowth, A. H. W., 5, Carr's-lane, High Birmingham.

Ramsden, Cram & Co., Bingley, York.  
London office, 72, King William-st., London, E.C.

REID BROS., 12, Wharf-rd., City-rd., London, N. *See index to advertisers.*



**ctors—Telegraph—continued.**

G. F., 5, Great Winchester-st., London,

D. & Co., 2, Post's-corner, Westminster,  
on, S.W.

JULIUS, 108, Gt. Russell-st., Blooms-  
and Bedford Telegraph Works, Store-  
edford-sq., London, W.C.

Bros. & Co., 12, Queen Anne's-gate,  
on, S.W.

, James E. & Samuel, 3, Queen-street-  
and Cannon-street, London, E.C.

, Jno., Neal-st., Spon-la., W. Bromwich.  
son, Reynolds, & Co., Castle Works,  
erhampton.

Co., Ashwin-st., Dalston-junction, E.  
Patents Proprietary Co., Limited, Mild-  
Park Works, Balls Pond, London, N.

, Sidney F., & Oliver, 195, Severn-road,  
ff, and at Nottingham.

& Irish, 30, Borough-road, Sunderland.

**Contractors, Telephone.**

*F.—Telephones (Entrepreneurs de).*

*G.—Telephonen—Contractoren.*

c Shaw, 10A, Victoria-buildings, Victoria-  
lanchester. *See index to advertisers.*

dated Telephone Construction & Main-  
ce Co., Limited, 109, Farringdon-road,  
on, E.C.

J., & Son, All Saints' Works, Derby.  
a, George, 8, Victoria-st., Shaw Heath,  
port.

J. T. & Co., Faraday Works, King  
ard's-road, Leicester. *See index to ad-  
ers.*

EY'S (W. & T.) TELEGRAPH WORKS  
LIMITED, Offices, 8, Drapers'-gardens,  
on, E.C. *See index to advertisers.*

ohn, Nelson-st., Swansea.

N. C., 140, Douglas-st., Glasgow.

d Telephone Co., 3, Bottle-lane, Not'ham.

erge's Telephone Co., Ltd., 20, Bucklers-  
London, E.C.

J. Berger & Co., 31, Lombard-st., Lon-  
E.C. *See index to advertisers.*

ER, SONS, & Co., New Station-road,  
ield.

me Company of Ireland, Limited, Com-  
ial-buildings, Dublin.

, Sydney F., & Oliver, 195, Severn-road,  
iff, and at Nottingham.

ON & IRISH, 30, Borough-rd., Sunder-

ouse & Rawson, 11, Queen Victoria-street,  
on, E.C.

**per Companies and Merchants.**

*F.—Cuivre (Compagnies de).*

*G.—Kupfergieserei und Händler.*

ELL, JOHN & SONS, 28, Pickford-st.,  
ingham.

**Copper Companies & Merchants—continued.**

BLEWS, WILLIAM & SONS, 9 to 15, New  
Bartholomew-st., Birmingham; Dom Molt-  
shanoff Negliuny, Moscow; and 38, West  
Smithfield, London, E.C., contractors to the  
cities of Moscow, Mexico, San Paulo, &c. Gas  
Companies. (Established 1782.)

Clegg & Shaw, 10A, Victoria-buildings, Victoria-  
st., Manchester.

Grenfell, Pascoe & Sons, 14, Novia Scotia,  
Liverpool, and Middle & Upper Bank Copper  
Works, Swansea.

Smith, J. & Son, 18, 23 & 24, St. John's-square,  
London, E.C.

Stanton Bros., 73, Shoe-lane, London, E.C.  
Refined copper plates for electrotypers.

Vivian, H. H. & Co., 46, George-st., Parade,  
Birmingham.

**\* Copper Smelters and Refiners.**

*F.—Cuivre (Raffineurs de).*

*G.—Kupfer-giessereien.*

Bolton, T. & Sons, Mersey Copper Works,  
Widnes, Cheadle, and Birmingham.

Lees & Saunders, 5, Warstone-lane, Birmingham.

M'Crindell, Schaw & Co., 180, West George-st.,  
Glasgow.

Williams, William, Thistle-st., Hobburn New  
Town, Newcastle-on-Tyne.

**Copper Tape Manufacturers, for Elec-  
trical Purposes.**

*F.—*

*G.—*

Clifford, C. & Son, Fazeley-st., Birmingham.

CUTTING, R. C. & Co., Wardrobe-chambers,  
Queen Victoria-st., London, E.C.

Glover, W. T. & Co. Chief office: 25, Booth-  
st., Manchester. London office: 28, Budge-  
row, E.C. Glasgow office: 85, Buchanan-  
st. *See index to advertisers.*

**\* Copperas Manufacturers.**

*F.—Couperose (Fab. de.).*

*G.—Eisenvitriol.*

Lawson, Jas. Coldwell, 38, Quayside, Newcastle.

**\* Coppersmiths & Braziers.**

*F.—Fondeurs en Cuivre et Bronze.*

*G.—Kupferschmiede und Görtler.*

Benham & Foud, Chandos Metal Works, 40, 41,  
and 42, Chandos-st., Strand, W.C.

BLEWS, WILLIAM & SONS, 9 to 15, New  
Bartholomew-st., Birmingham; Dom Molt-  
shanoff Negliuny, Moscow; and 38, West  
Smithfield, London, E.C. Contractors to the  
Cities of Moscow, Mexico, San Paulo, &c. Gas  
Companies. (Established 1782.)

OWEN, SAML., & Co., 22, Whitefriars-street,  
London, E.C.

VULCAN MANUFACTURING CO., Vulcan  
Works, Rocliffe-street, City Garden-row,  
London, N. *See index to advertisers.*

**Core Serving Machine Manufacturers.**

*F.—*

*G.—*

**BARRACLOUGH, T. & CO., LIMITED.**

Offices: 8, King-street; Works: Whitley-street, Rochdale-road, Manchester. *See index to advertisers.*

**MOFFATT, ALEXANDER & Co.,** 26, College-st., Dowgate-hill, London, E.C. *See index to advertisers.*

**\* Cotton Waste Merchants.**

*F.—Déchets de Coton.*

*G.—Putzlappen-Händler.*

**BACK, USHER,** 77, Blackfriars-road, London, S.E.

**BLEWS, WILLIAM & SONS** (agents), 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff Negliuny, Moscow; and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. (Established 1782.)

**Boardman Bros.,** Sharp-st. Mills, Rochdale-rd., Manchester.

**Card, Nathaniel & Co.,** Smyrna Twist Mills, Rochdale-rd., Manchester.

**DEFRIES, J., & SONS,** 147, Houndsditch, London, E. *See index to advertisers.*

**Findlay, J. & Co.,** 113, Virginia-place, Glasgow.

**Goodwin, Wm. & Co.,** 36, Primrose-street, Bishopsgate-street, London, E.C.

**MORGAN R. & SON,** 217, Blackfriars-road, London, S.E. *See index to advertisers.* Warehouse: 13, Charles-street, London, S.E.

**ROSE, SIR W. A., & Co.,** 66, Upper Thames-street, London, E.C.

**\* Crucible Manufacturers.**

*F.—Creusets (Fab. de).*

*G.—Schmelztiegel—Fab.*

**Bagshaw, George & Son,** Headford Works, 42, Egerton-lane, & 50, Headford-st., Sheffield.

**Brayne, F. & Co.,** Bow Pottery, Three Mills-lane, Bromley-by-Bow, London, E.

**DOULTON, HENRY & CO.,** Granville-wharf, Granville-street, B'ham; 100, Soho, Liverpool; chief Office: Lambeth Pottery, London, S.E. Medals at numerous Exhibitions.

**HARPER & MOORES,** 2, Crescent-wharf, Cambridge-street, Birmingham.

**SMITH, GEORGE,** Fauldhouse-street, Rutherglen, Glasgow.

**STIFF, JAS. & SONS,** High-st., Lambeth, London, S.E. *See index to advertisers.*

**WATERHOUSE, JAS. C.,** Soho Works, Wakefield. Sole maker of Waterhouse's patent crucibles, the best yet introduced. Plumbago for moulders and lubricating.

**\* Designers and Draughtsmen**

*F.—Dessinateurs.*

*G.—Zeichner.*

**Groth, L. A.,** 30, Finsbury-pavement, London, E.C.

**Jamieson, Andrew, C.E., F.R.S.E., &c.,** Principal College of Science and Art, 38, Bath-street, Glasgow.

**Messer & Thorpe,** 8, Quality-court, Chancery-lane, London, W.C.

**MORRISON, G. & M.,** 166, Buchanan-street, Glasgow.

**SNELL & GLENDENING,** St. Paul's Church-yard, 21, Paternoster-row, London, S.E.

**Distribution of Electricity by Secondary Generators.**

**National Co. for the Distribution of Electricity by Secondary Generators, Limited,** 18, Wick-street, Regent-street, London, W.

**\* Drain Pipe (Stone-ware) Manufacturers.**

*F.—Tuyaux en Poterie (Fab. de).*

*G.—Tonröhren Fabriken.*

**DOULTON, HENRY & CO.,** Granville-st., Birmingham; also Rowley Staffs; Chief Office, Lambeth Pottery, London, S.E.

**Knowles, J. & Co.,** 8, Euston-road. Depot, Pancras Goods Station, London, N.W.

**STIFF, JAMES & SONS,** London Pottery, High-street, Lambeth, S.E. (Established 1751.) *See index to advertisers.*

**\* Draining Tool Manufacturer**

*F.—*

*G.—Werkzeug zum Gebrauch für Rohrlagerung.*

**Orme, Frederick & Co.,** 9, St. Andrew's Church, Holborn-viaduct, London, E.C. *See index to advertisers.*

**Driving Band Fastener—Makers**

*F.—*

*G.—*

**SELIG, SONNENTHAL & CO.,** 85, Victoria-street & Lambeth-hill, London. Sonnenthal's patent.

**Chase, Wm. H., junr.,** 103, Fenchurch-street, London, E.C.

**Driving Band Makers—Cotton**

*F.—Courroies de Transmission—Coton*

*G.—Maschinenriemen—Zug.*

**Aitken, Thos. & Son,** Helmshore, nr. Manchester.  
**BINNEY & SON,** 62, Queen Victoria-street, E.C., and Catherine-street, City-road, London, E.C.; 22, Wellington-street, Leeds; 50, Howard-street, Glasgow; and 63, Broad-street, Birmingham.

**g Band Makers—Cotton—continued.**

J. & Sons, Charlesworth, Broadbottom.  
Maurice, 130, Queen Victoria-st.,  
m, E.C.

1, Wm. & Co., 36, Primrose-street,  
pegate, London, E.C.

11, Robert, Palmerston-st., Bollington,  
esfield.

Scott & Co., Ropery and Flax Mills,  
port.

ottom, J., Charlesworth, Broadbottom.

eth, David, Bridge-st., Stalybridge.

, L., Simmondley, Glossop.

, W. & Sons, 86, Queen-street, London,

Son, Simmondley, Glossop.

, J. H., Kinder Lee Mills, Charlesworth,  
bottom.

ey, F. & Co., Cheltenham-st., Pendleton,  
vester. Camel-hair Belting.

om, J., Holehouse Mills, Charlesworth,  
bottom.

om, Samuel, Meadow Mills, Glossop.

H BROS., 89, City-road, London, N.  
*See index to advertisers.*

W., New Mills, Stockport.

**ag Band Makers—India Rubber.**

*Courroies de transmission—Indiarubber.*

*F.—Maschinenriemen—Indiarubber.*

Vale Rubber Co., Limited, 13, Bow-  
London, E.C.

Y & SON, 62, Queen Victoria-street,  
n, E.C., and Catherine-street, City-road,  
n, E.C.; 22, Wellington-st., Leeds; 50,  
Howard-street, Glasgow, and 63, Broad-  
Birmingham.

ham India Rubber Co., New-st. and  
Henry-st., Birmingham.

, Wm. & Co., 36, Primrose-st., Bishops-  
London, E.C.

son, A. & Co., 3, Great Winchester-st.,  
n, E.C.

ibber, Gutta Percha & Telegraph Works  
ny, Limited, 106, Cannon-st, London,

**THE BRITISH  
RUBBER CO., LD.,**

ouses: 6, Char-

., Mosley-st.,

ster; 57, Moor-

, London, E.C.;

15, Oswald-st.

v. Works, Castle

Edinburgh.

H BROS., 89, City-road, E.C. *See index  
to advertisers.*



**ving Band Makers—Leather.**

*—Courroies de Transmission—Cuir.*

*G.—Maschinenriemen—Leder.*

r Co., 36, Tanner-street, Bermondsey,  
a. S.E.

**Driving Band Makers—Leather—contd..**

Angus, G. & Co., 187, Upper Thames-street,  
London, E.C.

Ashton, T. A., 36, 40, & 42, Norfolk-st., Sheffield.

BARR, ROBT. (Agent for Oldfield & Walton),  
94, East India Dock-road, London, E. Patent  
link leather and plain belting makers.

BINNEY & SON, 62, Queen Victoria-st., E.C.;  
& Catherine-st., City-road, London, E.C.; 22,  
Wellington-street, Leeds; 50, West Howard-  
street, Glasgow; and 63, Broad-st., B'ham.

Boyce, C. J. & Co., 32, St. Mary Axe, London,  
E.C.

Bull, E., 89, Shoreditch High-st., London, E.

Burt, J. & Co., 70 & 71, Bishopsgate-st. Within,  
London, E.C.

Carpenter Bros., 44, Wellington-st., London, S.E.

Clarke, J., 16, Major-road, London, S.E.

Cobbett, W. W., 60, Queen Victoria-st., London,  
E.C.

Colley, Francis & Son, 86, Market-place, Sheffield.

Corcoran, Witt & Co., 30, Mark-lane, London,  
E.C.

Duncan Bros., 32, Queen Victoria-st., London,  
E.C.

Edwards, C. J. & Son, 32, Great Sutton-st.,  
Clerkenwell, London, E.C.

Farr, Richard, 312, King's-rd., Chelsea, London,  
S.W.

Faulkner, Alfred, 50, Moor-st., Birmingham.

Fenner, J. H. & C., Chapel-lane, Hull.

Fleming, Thos., Sons & Co., West Grove Mill,  
Halifax.

Franklin, H. & Co., 78, Gedling-st., Dockhead,  
London, S.E.

French, J. & Co., 71 & 73, Commercial-street,  
London, E.

Gibb, James & Co., 23, St. Mary Axe, London,  
E.C.

Goodall, A. & Sons, Brighouse, Yorkshire.

Goodwin, Wm. & Co., 36, Primrose-st., Bishops-  
gate, London, E.C.

Hanson, Scott & Co., Croft Hemp & Flax Mills,  
Stockport; warehouse, 64, George-street,  
Manchester.

Harbord, Henry, Millstream-road, Dockhead,  
London, S.E.

Henderson, H. and Sons, 63, Bishopsgate-street  
Within, London, E.C.

Hepburn & Gale, 239, Long-lane, Southwark,  
London, S.E. *See index to advertisers.*

Holgate & Co., 33, Great Dover-st., London, S.E.

Hughes, J. & Sons, 217, Gt. Dover-st., London,  
S.E.

Jamaiker Bros., 54, Church-street, Minories,  
London, E.

Lancashire Patent Belting and Hose Co., Wiro  
Works Mill, Strangeways, Manchester.

Macintosh Charles & Co., Cambridge-st., Man-  
chester.

M'Intosh, P. & Sons, 23, St. Mary Axe, London,  
E.C.

Mason, Daniel & Sons, 141 & 142, Bath-row,  
Holloway-head, Birmingham.

**Driving Band Makers—Leather—contd.**

- MORGAN, ROBERT & SON, 213 & 217, Blackfriars-road, S.E.; warehouse, 13, Charles-street, London, S.E.
- Moseley, D. & Sons, Chapelfield Works, Ardwick, Manchester.
- NOBES, HOMAN & HUNT, 75, Rockingham-st, Newington-causeway, London, S.E. *See index to advertisers*
- Norris, S. E. & Co., 56, 57 & 58, High-street, & St. Paul's Works, Shadwell, London, E.
- OKES, J. C. R., 39, QUEEN VICTORIA ST, LONDON, E.C. THE "VICTORIA" LEATHER BELTING FLEXIBLE, STRONG, AND OF EVEN QUALITY. WROUGHT IRON PULLEYS, &c.
- Oldfield, W. & Walton, 38, Charlotte-lane, Glasgow.
- Orme, Fredk. & Co., 9, St. Andrew's-street, Holborn-viaduct, London, E.C.
- Ormerod, O. & W., 70 & 71, Bishopsgate-st. Within, London, E.C.
- Patent Anhydrous Leather Co., Portsmouth.
- Phillips, Chas. D., Emlyn Works, Newport, Mon.
- Potter, Wm. & Son, 33, Green-st., Wellington-st., Blackfriars-road, London, S.E.
- Richardson, E. & J., Elswick Leather Works, Elswick.
- Rimington Bros., Carlisle.
- Ross, Alex. & Co., Grange Mills, Grange-rd., London, S.E.
- Rowbottom, F., works, Moor Mill, New Mill, near Stockport.
- SELIG, SONNENTHAL & CO., 85, Queen Victoria-st., & Lambeth-hill, London, E.C. American Pure White Oak Tanned. *See index to advertisers*
- SHEATH BROS., 89, City-road, London, E.C. *See index to advertisers*
- Staynes & Sons, 60 & 62, High-street, Leicester.
- Stevens, Pallatt & Co., 57, Lant-st., London, S.E.
- Thornton, Currie & Co., 43, 45 & 47, Jamaica-st., Glasgow.
- Tuck & Co., Ltd., 116, Cannon-st., London, E.C.
- Tullis, John & Sons, St. Ann's Leather Works, Glasgow.
- Tullis, Thomas L. & Co., Europa Leather Works, Bridgeton, Glasgow.
- Webb & Sons, Combs Tannery, Stowmarket.
- White, John H. & Co., 12, Burdett-rd., London, E.
- White, John & Sons, Park-row Leather Works, Bingley, Yorkshire.
- Whitehead, R. R. & Bros., 10, Endell-street, London, W.C.
- Whiteley, Joshua, 2, King William-street, London, E.C. (J. Abercrombie, agent).
- Willcox, Mark, Sowerby Bridge, Yorkshire.
- Wild, Augustus & Co., 51, Gt. Dover-street, London, S.E.
- WILCOX, W. H. & CO., 36, Southwark-street, London, S.E.
- Witty & Wyatt, Billiter House, Billiter-st., E.C.

**\* Dynamo Machines for Electro-Plating (Manufacturers of).**

*F.—Machines dynamo pour galvanoplastie*

*G.—Dynamo-Maschinen für galvanoplastie*

- Apps, A., 433, Strand, London, W.C.
- BERLY, J. A., 16, New Bridge-st., London, E.C. The "Mather" Dynamo, for electroplating. *See index to advertisers*
- Carlyle, W. A., 91 & 92, Constitution-st., Birmingham. *See index to advertisers*
- Edmunds, Henry, 2, Victoria Mansions, Victoria-street, Westminster, London, S.W. *See page of advertisements.*
- Gulcher Electric Light & Power Co., Ltd., 4, Coleman-street, London, E.C.; Battersea Foundry, London, S.W.
- HENLEY'S, W. T. TELEGRAPH WORKS CO., LIMITED; offices, 8, Drapers'-gate, London, E.C.
- Mather & Platt, Salford Iron Works, Manchester.
- METROPOLITAN (BRUSH) ELECTRIC LIGHT & POWER COMPANY, LIMITED, 110, Cannon-st., London, E.C.
- Opperman Brothers, Brewhouse-yard, 2, John's-street, London, E.C.
- Spence, J. Berger & Co., 31, Lombard-st., London, E.C. *See index to advertisers.*
- Walker, Sidney F. & Oliver, 193, Sevenoaks-st., Cardiff, and at Nottingham.
- WOLVERHAMPTON ELECTRIC LIGHT & STORAGE & ENGINEERING CO. (LIMITED), Parker & P. Bedford Elwell, Commercial-road, Wolverhampton.
- Woodhouse & Rawson, 11, Queen Victoria-st., London, E.C.

**Dynamo Magneto and Electric Machine Manufacturers.**

*F. Machines dynamo et magneto électrique*

*G.—Dynamo-Maschinen*

- Apps, A., 433, Strand, London, W.C.
- BERLY, J. A., C.E., A.S.T.E., &c., 16, New Bridge-st., London, E.C. Agent for the Patent. *See index to advertisers.*
- Binswanger, G. & Co., 20, Aldermanbury, London, E.C.
- Blakey, Hannott & Co., Northern Telegraph Works, Halifax, 56 and 58, Southwark-buildings, Chancery-lane, London, W.C. *See index to advertisers*
- British Electric Light Co., Limited, offices, works, Turk's Head-yard, Turnmill-lane, London, E.C. (Gramme Machines, Brucke Arc Lamp "British" Incandescent Lamps.)
- Bramfield, J. Coley, 49, Saltburn-road, Sussex.
- Carlyle, W. A., 91 and 92, Constitution-st., Birmingham.
- Chadburn & Son, Telegraph Works, Walbrook, Liverpool.
- Chamberlain & Hookham, 4, New Bartholomew-street, Birmingham.



## o Magneto and Electric Machine Manufacturers—continued.

(L.) MUIRHEAD & CO., 23, Regency-stminster, London, S.W. (Lontinsystem.)  
 TON, R. E. & CO., 4, Queen Victoria-London, E.C. (Bürgin system.)  
 ISS & CO., 72, New Briggate, Leeds.  
 & Swan United Electric Light Co., rd, 74, Coleman-street, London, E.C.  
 s, Henry, 2, Victoria Mansions, Vic-street, Westminster, London, S.W. *See ge of advertisements.*  
 Lighting Supply & Fitting Co., Limited; k works, 28, York-street, Westminster, n, S.W.  
 Dynamic Co. of Philadelphia (C. R. general agent), Archway-house, Bush-london, E.C.  
 W., 91, Blackfriars-road, London, S.E.  
 STONE-VINCENT ELECTRIC DY-D MACHINE, 79½, Gracechurch-street, n, E.C.  
 & Co. (F. R. Francis, C.E., Manager), Telegraph Works, Hatton Garden, n, E.C., & Lawford-rd., London, N.W.  
 & Co., Sash-ct., Wilson-st., Finsbury, *See index to advertisers.*  
 . A., 30, Finsbury-pymnt., London, E.C.  
 Electric Light & Power Co., 4, Cole-treet, London, E.C.; works, Battersea ry, London, S.W.  
 Y'S W. T. TELEGRAPH WORKS, LIMITED; offices, 8, Drapers'-gardens, n, E.C.  
 on, Dr. John, F.R.S., 4, Westminster-ers, London, S.W.  
 bber, Gutta Percha Telegraph Works,annon-st., London, E.C.  
 ry F., C.E., 9, Tower-chambers, Moor-reet, London, E.C.  
 LLAN, 3, Camden Cottages, Camden N.W.  
 ARMAND, electrical sundriesman, 252, ll-rd., London, E.C., and 42, Rue de oeck, Brussels. Importer of foreign ctures. Second-hand machines always hand.  
 R & PLATT, Salford Ironworks, Man-  
 POLITAN (BRUSH) ELECTRIC T AND POWER COMPANY, LD.,annon-street, London, E.C.  
 JANN BROS., Brewhouse-yard, 172, in's-street, London, E.C. *See index to ervers.*  
 SON & COOPER, 76, Little Britain, n, E.C. *See index to advertisers.*  
 t Son, 529, King's-rd., Chelsea, London,  
 N," "JOEL," & GENERAL ELEC-LIGHT CO., LIMITED, St. Stephen's-ers, Telegraph-street, Moorgate-street, n, E.C.  
 s., 12, Wharf-rd., City-rd., London, N.

## Dynamo Magneto and Electric Machine Manufacturers—continued.

Schoth, G. A., 232, Euston-road, London, N.W.  
 Sennett, A. R., Electrical Engineering Works, Hatton-garden, London, E.C.  
 Siemens Bros. & Co., Limited, 12, Queen Anne's-gate, Westminster, London, S.W. (Siemens' continuous and alternating systems.)  
 Snell & Glendening, St. Paul's-buildings, 21, Paternoster-row, London, E.C. *See index to advertisers.*  
 Spence, J. Berger & Co., 31, Lombard-street, London, E.C. *See index to advertisers.*  
 Varley Patents Proprietary Co., Limited, Mild-may-park Works, London, N.  
 Wailes, George & Co., 258, Euston-road, N.W.  
 Walker, Sidney F. & Oliver, 195, Severn-road, Cardiff, and at Nottingham.  
 Weedon & Irish, 30, Borough-rd., Sunderland.  
 WOODHOUSE & RAWSON, 11, Queen Vic-toria-street, London, E.C. *See index to adver-tisers.*

## Earthenware Manufacturers.

(For Electrical Purposes).

F.—Appareils en grès.

G.—Tonwaaren-Fabrikanten.

ASHWORTH, G. L., & BROS., Broad-st., Hanley, Stafford. *See index to advertisers.*  
 Bailey, J. & Sons, 28, Market-st., Tamworth, Stafford.  
 Bodley, E. F. & Son, Scotia Works, Burslem.  
 BRAYNE, F. & CO., Bow Pottery, Three Mills-lane, Bromley-by-Bow, London, E.  
 Calvert & Lovatt, Langley Mill, Nottingham.  
 Crystal Porcelain Co, 23, St. Swithin's-lane, London, E.C. *See index to advertisers.*  
 Derby Crown Porcelain Co., Limited, 27, Ely-place, London, E.C.  
 Dooley, T. C., Woodville.  
 DOULTON & CO. (late Pinder, Bourne & Co.), Waltham-buildings, Holborn-circus, E.C. Works—Burslem, Staffordshire. Manufac-turers of Insulators, Battery Jars, Plates, Porous Cells, and all Telegraphic and Electric Appliances in Earthenware.  
 Fielding & Co., Stoke-on-Trent.  
 Gildea & Walker, Dale Hall, Burslem.  
 Grove & Stark, Palissy Works, Longton, Stafford.  
 Kirkham, W., London-road, Stoke-on-Trent.  
 LEWIS, J. SLATER, 28, Hamilton-street, Birkenhead. Works, Helsby.  
 Maling, C. T., Ford Pottery, Newcastle-on-Tyne. London sample rooms, 20, Bartlett's-buildings, Holborn-circus, E.C. *See index to advertisers.*  
 Marsh & Co., 18, New Bridge-st., London, E.C. *See index to advertisers.*  
 Plant, J., Registry-st. Works, Stoke-on-Trent.  
 Poole & Son, John-st., Stoke-on-Trent.  
 PRICE, SONS & CO., The Old Stoneware Potteries, Bristol. *See index to advertisers.*

**Earthenware Manufacturers—continued.**

- TAYLOR TUNNICLIFF & CO., Eastwood, Hanley. London agent, Edwin Fox, 9, Bartlett's-buildings, Holborn-circus, London, E.C. *See index to advertisers.*
- Wedgwood, Josiah & Sons, Etruria, Stoke-upon-Trent.
- WOOD, WILLIAM & CO., Albert-st. Works, Burslem.
- Woodhouse & Rawson, 11, Queen Victoria-st., London, E.C.
- Wright, E., Wheat Bridge Pottery, New Brampton, Chesterfield.

**Ebonite Manufacturers.**

*F.—Ebonite (Fab. d').*

*G.—Ebonite-Fabrikanten.*

- Baughan, W. H. & Co., Charlbury, Oxon.
- Binswanger, G. & CO., 29, Aldermanbury, London, E.C.
- Britannia Rubber & Kamptulicon Company, 32, Cannon-st., London, E.C.
- Clegg & Shaw, 10a, Victoria-buildings, Victoria-st., Manchester. *See index to advertisers.*
- Davis & Tnumans, Bowling-green-lane, Farringdon-road, London, E.C.
- Fearn, Francis H. & Co., Trafalgar Works, Old Kent-road, London, S.E.
- FRANKS, ROBINSON & CO., 76, Milton-st., Fore-st., London, E.C. Turners of electrical small work in vulcanite, ebonite, ivory, &c. *See index to advertisers.*
- HARBURG INDIA RUBBER CO., 138, London Wall, London, E.C.
- LEVY, ARMAND, electrical sundriesman, 252, Goswell-road, London, E.C., and 42, Rue de Huy-broek, Brussels. Sheet rod tube, and any class of mouldings, telephone cases, &c.
- MOSES & MITCHELL, 68, 69, 70 & 71, Chiswell-street, London, E.C.
- New York Hamburg India Rubber Co., Coleman-st., London, E.C.
- Sheath Bros., 89, City-road, London, E.C. *See index to advertisers.*
- WINTER, F., 138, London Wall, London, E.C. *See index to advertisers.*
- Woodhouse & Rawson, 11, Queen Victoria-st., London, E.C. Sheet & Rod in stock.

**Electric Alarms Burglars, Fire, Safes, Ships, Trains, &c.**

*F.—Appareils électriques, colonnes, feu, &c.*

*G.—Electrische Alarm-Apparate.*

- Apps, A., 453, Strand, London W.C.
- Baughan, W. H. & Co., Charlbury, Oxon.
- Berry, F. H., 8, Percival-st., Clerkenwell, London, E.C. *See index to advertisers.*
- BLAKLEY EMMOTT & CO., Northern Telegraph Works, Halifax 55 & 56, Southampton-buildings, Chancery-lane, London W.C. *See index to advertisers.*
- BLAND, J. H. & Co., 75, Blackfriars-road, S.E., and 27, Kirby-st., Hatton-garden, London, E.C.

**Electric Alarms Burglars, Fire, Ships, Trains, &c.—continued.**

- BLEWS, WILLIAM (Estab. 1782), 1, New Bartholomew-st., Birmingham.
- Moltshanoff, Neghuny, Moscow, and 2, Smithfield, London, E.C. Contractor Cities of Moscow, Mexico, San Francisco, &c. Gas Companies.
- BRYDEN, JOHN & SONS, 2, Balgavendish-sq., W., and 90, Gloucester South Kensington, London, S.W.; 21, Frederick-st., Edinburgh, 24, Renfrew Glasgow, 7, Princess-street, Perth, Comestreet, Dundee. *See index to advertisers.*
- BURLEY, WILLIAM, Tower-chamberdon Wall, London, E.C.
- DALE, H. & E. J., 4, Little Britain, 26, Ludgate-hill, London, E.C. *See index to advertisers.*
- Francis & Co (F. R. Francis, C.E.), 11, Eagle Telegraph Works, Hatton Garden & Lawford-road, London, N.W.
- FOULGER, CHARLES, 56, Wapping, pool. Electric bells with Foulger's indicators.
- Garnham & Co., Sash-court, Wilton London, E.C. *See index to advertisers.*
- Gent, J. T. & Co., Faraday Works Richard's-road, Leicester *See index to advertisers.*
- Goold, G. D. & Co., 27, Broomfield Wandsworth-common, London, S.W.
- GRIFFITH & CO., 1, Queen Anne's-gate, London, S.W. Works. Reading *See index to advertisers.*
- Kelso & Co., 43, Union-street, Glasgow.
- KING & CO., Western Electric Narrow Wine-street, Bristol.
- Keerber, J. A., 44, Frith-st., Soho-London, W.
- REID BROS., 12, Wharf-road, City London, N. *See index to advertisers.*
- SAX, JULIUS, 108, Great Russell Bloomsbury, W.C. & Bedford Telegraph Store-street, Bedford-square, London.
- SIGNAL ENGINEERING CO., 181, Holborn, London, W.
- SHIPLEY BROS & CO., 13 & 14, King Champside, London, E.C. *See index to advertisers.*
- Snell & Glendening, St Paul's-buildings Paternoster-row, London E.C. *See index to advertisers.*
- Sugg, William & Co., Limited, Vincent-London, W.
- THURKLE & CO., 5, Denmark-st London, W.
- Vulcan Manufacturing Co., Vulcan Rockiffe-street City Garden-row, London, E.C. *See index to advertisers.*
- Walker, Sidney F. & Oliver, 105, Seven Caniff, and at Nottingham
- Weedon & Irish, 30, Borough-road, South Western Eastern Co., 59, Moorgate London, E.C.

**Apparatus for Lighting Gas.**

*pareils électriques pour allumer le gaz.*

*ische Apparate zum Anzünden des Gases.*

433, Strand, London, W.C.

r, G. & Co., 29, Aldermanbury, E.C.

W. H. & Co., Charlbury, Oxon.

WILLIAM & SONS (Estab. 1782) 9 New Bartholomew-st., Birmingham. Moltshanoff, Negliuny, Moscow, and 38, Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, Companies.

haw, 10A, Victoria-buildings, Victoria-chester.

& E. J., 4, Little Britain, E.C., & gate-hill, London, E.C.

Appliance Co., Trafalgar-buildings, Cross, S.W.

as Lighting Co., Limited, Clegg-court, street, Salford, Manchester.

Co. (F. R. Francis, C.E., Manager), Telegraph Works, Hatton Garden, E.C., ord-road, London, N.W.

L ELECTRIC APPARATUS COM- 29, Aldermanbury, London, E.C.

J. A., 44, Frith-st., Soho-square, W.

LD, J. T., 41, Queen Victoria-street, E.C. Batteries of all kinds, Zinc Rods, Cylinders, Nickel Anodes, & plating Outfits to suit every requirement.

ILIUS, 108, Great Russell-street, bury, W.C., & Bedford Telegraph Works, reet, Bedford-square, London, W.C.

ENGINEERING CO., 181, High i, London, W.C.

eo. (Clarke's System), 3, Wigmore-st., sh-sq., London, W.

Co., 48, Osnaburgh-st., London, N.W.

lliam & Co., Limited, Vincent Works, W.

lidney F. & Oliver, 195, Severn-road, and at Nottingham.

Electric Co., 57, Moorgate-street, E.C.

USE & RAWSON, 11, Queen Vic-reet, London, E.C.

**Bell Fitters and Contractors.**

*-Sonneries électriques (Poseurs de).*

*-Electrische Glocken—Einrichter.*

S. & Son, 66, Swanswell-st., Coventry. 433, Strand, London, W.C.

. & F., Church Gate, East Retford.

& Sons, 28 & 29, Market-st., Tamworth, l.

H. & Co., 75, Blackfriars-road, S.E.; Kirby-street, Hatton-garden, London,

**Electric Bell Fitters & Contractors—contd.**

BLEWS, WILLIAM & SONS (Estab. 1782), 9 to 15, New Bartholomew-st., Birmingham, Dom Moltshanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies.

Brailsford, T. R., Thames Conservancy, 41, Trinity-square, London, E.C.

BRYDEN, JOHN & SONS, 2, Bulstrode-st., (corner of Welbeck-st.), Cavendish-square, W.; and 90, Gloucester-road, South Kensington, London, S.W.; and at 16, Frederick-st., Edinburgh; 24, Renfield-st., Glasgow; 7, Princes-st., Perth; Commercial-st., Dundee. (Established 1809.) *See index to advertisers.*

BURLEY, WM., Tower-chambers, London-wall, London, E.C.

Capham, Chas., 20, Clarges-st, Piccadilly, London, W.

Clarke, Arthur, 30, Watling-street, London, E.C.

Coe & Smith, 11, Denmark-st., Soho, London, W.C.

Cubley & Preston, 4, High-street, Sheffield.

CUTTING, R. C. & Co., Wardrobe-chambers, Queen Victoria-st., London, E.C.

Dale, H. & E. J., 4, Little Britain, E.C.; and 26, Ludgate-hill, London, E.C.

Davis, G. F., 185, Vauxhall-bridge-road, London, S.W.

Davis, J. & Son, All Saints' Works, Derby.

DEFRIES, J., & SONS, 147, Houndsditch, London, E. *See index to advertisers.*

Denny, Robert, 131, Oxford-st., Glasgow.

Durham, George, 8, Victoria-st., Shaw Heath, Stockport.

Edmundson, J. & Co., 19, Great George-st., London, S.W.

Fenn, Wm. Th., 5, North-st., Sloane-st., London, S.W.

Francis & Co. (F. R. Francis, C.E., Manager), Eagle Telegraph Works, Hatton-garden, London, E.C., & Lawford-road, London, N.W.

Gent, J. T., & Co., Faraday Works, King Richard's-rd., Leicester. *See index to advertisers.*

Glanville, C. & G., 6, Exeter-row, Birmingham.

Goold, G. D. & Co., 27, Broomswood-road, Wandsworth Common, S.W.

GRIFFITH & CO., 4, Queen Anne's-gate, London, S.W. Works: Reading. *See index to advertisers.*

HAMILTON, R. & SON, 44, Conway-st., Birkenhead.

Hancock, William, 22, Stratford-rd., London, W.

Harmer, C. & Son, 11, Lingfield-rd., Wimbledon.

Harrow & Co., 13 & 14, Portland-st., Soho, London, W.

Hoskins & Redford, 34, Bridlesmith-gate, Nottingham.

Kelso & Co., 43, Union-st., Glasgow.

Koerber, J. A., 44, Frith-st., Soho-sq., London, W.

New & Co., 44, Dean-st., Soho, London, W.

NEWNHAM, F., 21, Compton-st., Goswell-road, London, E.C.



**Electric Bell Fitters & Contractors—contd.**

Northam, John, & Co., Limited, 30, Norfolk-st., Sheffield.  
 ORME & CO., 65, Barbican, London, E.C.  
 PATERSON & COOPER, 76, Little Britain, London, E.C. *See index to advertisers.*  
 Scott, Ronald A., 6, Pomona-pl., Fulham, London, S.W.  
 SIGNAL ENGINEERING CO., 181, High Holborn, London, W.C.  
 Snell & Glendening, St. Paul's-bdgs., 21, Paternoster-row, London, E.C.  
 Spence, J. Berger, & Co., 31, Lombard-street, London, E.C.  
 Sugg, William & Co., Vincent Works, Vincent-st., Westminster, London, W.  
 TAYLOR, E., Heaton-lane, Stockport, near Manchester.  
 THURKLE & CO., 5, Denmark-st., Soho, London, W.  
 Walker, S. F. & Oliver, 195, Severn-road, Cardiff, and at Nottingham.  
 Weedon & Irish, 30, Borough-rd., Sunderland.  
 Zundars, C. E., 327, Gray's-Inn-rd., London, W.C.

**Electric Bell Fittings Makers—China.**

*F.—*

*G.—*

Taylor, Tunnickiff & Co., manufacturers of china roses and pushes for electric bells, also speciality in china and stone for electric lighting purposes, Eastwood, Hanley. E. Fox, London agent, 9, Bartlett's-buildings, Holborn-circus, London, E.C. *See index to advertisers.*

**Electric Bell Manufacturers.**

*F. — Sonneries électriques (Fab. de).*

*G. — Electriche Glocken-Fabrikanten.*

Adam & Son, 57, Haymarket, London, S.W.  
 ANDERSON & MUNRO, 136, Bothwell-street, Glasgow.  
 Apps, A., 433, Strand, London, W.C.  
 Archbutt, J. & W. Es., 8, Bridge-street, London, S.W.  
 ARMSTRONG, STEVENS & CO, 15, Whittall-st., Birmingham.  
 Ashby, Geo. F., 165, King's-road, Chelsea, London, S.W.  
 Bailey, W. H. & Co., Essex-st., Salford, Manchester.  
 Barrett & Laggott, Market-st., Bradford.  
 Bassano & Slater, Traffic-st., Derby.  
 BAUGHAN, W. H. & Co., Chancery Green, To the trade complete or in parts finished or rough.  
 Beaumont & Dougill, 36, St. George-st., Leeds.  
 Becker, F. E. & Co., 14, Maiden-lane, Covent-garden, London, W.C.  
 BERRY, F. H., 18, Percival-st., London, E.C. *See index to advertisers.*  
 Binswanger G. & Co., Aldermanbury, London, E.C. Makers of the Patent Portable Silver Battery.

**Electric Bell Manufacturers**

Blackwell, George G., 26, Chapel-st., L.  
 BLAKEY, FMMOTT & CO., North-graph Works, Halifax, 55 & 56, South-buildings, Chancery-lane, London, W. *See index to advertisers.*  
 Bland, J. H. & Co., 75, Blackfriars-london, S.E., and 27, Kirby-street, garden, London, E.C.  
 Blenkarn, W., 82, Ferndale-rd., London, S.W.  
 BLEWS, WILLIAM & SONS, 9 to 1 Bartholomew-st., Birmingham. Don-hanoff, Neglinny, Moscow, and Smithfield, London, E.C. (Contractors Cities of Moscow, Mexico, San Francisco Gas Companies. Established 1782).  
 Bloomfield, Henry, King-st., Manchester.  
 Botten, John J., 46, City-rd., London, E.  
 British Insulate Co., Limited, 40, Col-london, E.C. Works Charlton, Kent.  
 BRYDEN, JOHN & SONS, 2, Hale and 90, Gloucester-rd., South Kensington, S.W. corner of Welbeck-st., Ch-square, London, W., also at 16, Prich-Edinburgh, 24, Renfield-st., Glasgow, Princes-st., Perth, Commercial-st., Established 1809. *See index to advertisers.*  
 BURLEY, WILLIAM, Tower-hamilton-wall, London, E.C.  
 Caldwell, Edward, Shakespeare-st., Not.  
 Chaburn & Son, Telegraph Works, V-road, Liverpool.  
 Challs Bros., 4, Orchard-buildings, London, E.  
 Chung, Gwyn & Co., 54 & 58, Cran-long-acre, London, W.C.  
 Christina & Company, 11, Queen Vic-london, E.C.  
 Christie, John C., 3 & 5, Mansell-st., L.  
 CLARK LATIMER, MURHEAD 25 to 31, Regent-st., London, S.W.  
 Clark & Company, 17, Turbott-st., Gl.  
 Cole, John R., 61, Freeman-st., Great Lincolnshire.  
 DALE, H. & E. J., 4, Little Britain, E.C. & 26, Lodge-st-hill, E.C. (Makers of the Bell Dale's New British India *See index to advertisers.*)  
 Davis, J. & Son, All Saints' Works, De.  
 Davis, G. F., 185, Vauxhall-bridge-london, S.W.  
 DEERIES, J. & SONS, 147, Houndst-london, E. *See index to advertisers.*  
 Edinburgh & Birmingham Brass Pos-10, St. James's-square, Edinburgh.  
 Edmondson, J. & Co., 19, Great George-london, S.W.  
 Endsell & Mudford, Jackson-rd., London, N. *See index to advertisers.*  
 Electric Appliance Co. The, Trafalgar-Charing-cross, London, S.W.



**Bell Manufacturers—continued.**

Magnetic Appliance Stores (J. Hintze, manager), 21, Liverpool-street, London, E.C. Works: Eagle Wharf-road, N. *See index to advertisers.*

Mark & Co., 9, Clifford-st., London, W. 8, Charles-st., Newport, Mon.

Co. (F. R. Francis, C.E., Manager), Telegraph Works, Hatton-garden, London, C., and Lawford-road, London, N.W. Marle, 22, Pigott-st., London, E.

& Co., Sash-court, Finsbury, London, *See index to advertisers.*

Electric Apparatus Company, 29, Alder-y, London, E.C.

T. & Co., Faraday Works, King's-rd., Leicester. *See index to adver-*

& Son, 70, Atlantic-road, Brixton, S.W.

D. & G., 267, Sauchiehall-st., Glasgow. John W. & Son, 115, Leadenhall-st., E.C.

H & CO., 4, Queen Anne's-gate, London, W. Works: Reading. *See index to rs.*

Wm., 89, Bolsover-st., Fitzroy-sq., W.

Company, 6, Sloane-st., London, S.W. ward, 39, Westmoreland-place, City-ondon, N. *See index to advertisers.*

e & Company, 41, George-st., Euston-lon, N.W.

J., 61, Sandgate-rd., Folkestone.

Co., High-st., Mortlake, London, S.W. enry, Watergate, Grantham.

lk., 50, Kenton-st., Brunswick-square, W.C.

James & Company, 121, Wardour-st., W.

t CO., 43, Union-street, Glasgow.

CO., Western Electric Works, Narrow-reet, Bristol.

J. A., 44, Frith-street, Soho-square, W.

ARMAND, Electrical Sundriesman, all systems, Indicators, Batteries, &c., swell-road, London, E.C.; & 42, Rue sbroeck, Brussels. The whole of the es necessary to the fitting up of houses classes of electrical work kept. Skil-s kept to take charge of all classes of work for trade only. *See index to rs.*

. C. & Son, 1, Lowndes-terrace, urchase, London, S.W.

Thos.T., 102, Fetter-lane, London, E.C.

os. & Co., 17, Hope-street, Glasgow.

& Swan, 13 & 15, Moseley-street, le.

**Electric Bell Manufacturers—continued.**

MAYFIELD, J. T., 41, Queen Victoria-st., London, E.C. Manufacturer & Fitter of Electric Bells, Trembling, Single Stroke, Continuous Action, Portable Bells in Case, especially useful for Invalids, Indicators, Batteries, Wires, Pushes or Press Buttons, and other Signalling Appliances.

Medland, J. B., 12, Borough High-st., London, S.E.

Mellish, Septimus, 68½ Leadenhall-st., London, E.C.

New & Co., 44, Dean-street, Soho, London, W.

PATERSON & COOPER, 76, Little Britain, London, E.C. *See index to advertisers.*

Paterson, W. & Son, 83, Pitt-street, Glasgow.

Phillips, John, 4, Glebe-street, Penarth, Cardiff.

Pickett, Thos., 14, St. George's-terrace, Kilburn, London, N.W.

Purcell & Nobbs, 89, Cleveland-st., Fitzroy-square, London, W.

Purser, G. & W., 182, Upper Thames-st., London, E.C.

Radcliffe, A. H. W., 5, Carrs-lane, High-street, Birmingham.

Sanderson & Co., Leadenhall-house, 101, Leadenhall-st., London, E.C.

Saul, David, H., 44, Barbican, London, E.C.

SAX, JULIUS, 108, Great Russell-street, Bloomsbury, London, W.C., and Bedford Telegraph Works, Store-street, Bedford-square, London, W.C.

Schoth, G. A., 232, Euston-road, London, N.W.

Scott, Ronald A., 6, Pomona-place, London, S.W.

SIGNAL ENGINEERING CO., 181, High Holborn, London, W.C. *See index to advertisers.*

Smith, J. & Sons, 18, 23 & 24, St. John's-square, London, E.C.

Smith & Stevens, 48, Leicester-square, London, W.C.

Spark, Alex., 187, George-street, Aberdeen.

Spence, J. Berger & Co., 31, Lombard-street, London, E.C. *See index to advertisers.*

Stevens, F. A., 17, Duke-street, London, E.C.

Strode & Co., 48, Osnaburgh-street, London, N.W.

Sutcliffe, J. L., 153, South-st., Moor, Sheffield.

Thorpe, Harry, 55, Theobald-road, London, W.C.

THURKLE & CO., 5, Denmark-street, Soho, London, W. *See index to advertisers.*

VULCAN MANUFACTURING CO., Vulcan Works, Roccliffe-st., City-garden-row, London, N. *See index to advertisers.*

Walker, Sidney F. & Oliver, 195, Severn-road, Cardiff, and at Nottingham.

Western Electric Co., 59, Moorgate-street, London, E.C.

Weston, G., 92, Mile-end-road, London, E.

Whalley, A., 71, Fliming-square, Blackburn.

Whittaker, P. & Co., 9, Parr-street, Liverpool.

Young & Buss, 18, Blandford-st., London, W.

Zimdars, C. E., 327, Gray's-inn-road, London, W.C.

**Electric Clocks & Electric Synchronization.**

*F.—Horloges électriques et synchronisation.*

*G.—Electrische Uhren und Zeitmesser.*

- Apps, A., 433, London, Strand, W.C.  
 Barraud & Lund, 41, Cornhill, London, E.C.  
 Blakey, Emmott & Co., Northern Telegraph Works, Halifax and 55 and 56, Southampton-buildings, Chancery-lane, London, W.C.  
 COMPAGNIE GENERALE DES HORLOGES PNEUMATIQUES DE PARIS. Poirr & Resch Patent System. The correct time distributed to any number of public and private clocks in a town, or all the clocks periodically synchronized by means of the PNEUMATIC system, as in use in the public thoroughfares and private houses of Paris. All the working parts of the machinery and apparatus at the Central and Distributing Stations automatically and electrically controlled. A yearly rental charged at a very moderate figure. Agent for Great Britain, J. A. BERLY, C.E., A.S.T.E. & E., 16, New Bridge-st., London, E.C. See *index to advertisers*.  
 Edward, G. & Sons, 92, Buchanan-st., Glasgow.  
 Francis & Co. (F. R. Francis, C.E., Manager), Eagle Telegraph Works, 89, Hatton-garden, E.C., & Lawford-road, London, N.W.  
 GRIFFITH & CO., 4, Queen-Anne's-gate, London, S.W. Works: Reading.  
 Groves, W., 89, Bolsover-st., Fitzroy-square, London, W. W. A. Strich's Magnetic Clocks.  
 Koerber, J. A., 41, Frith-st., Soho-square, London, W.  
 Lund & Blockley, 42, Pall-mall, London, S.W.  
 Mason Bros. & Co., 17, Hope-street, Glasgow.  
 Reid Bros., 12, Wharf-road, City-road, London, N.  
 Sugr, William & Co., Limited, Vincent Works, London, S.W.  
 Sutchiff, J. L., 153, South-st., Moor, Sheffield.  
 Vulcan Manufacturing Co., Vulcan Works, Rochiffe-street, City Garden-row, London, N.  
 Whalley, A., 71, Fleming-square, Blackburn.

**Electric Lamp Manufacturers—Arc.**

*F.—Lampes électriques à Arc (Fab. de).*

*G.—Electrische Lampen—Arc*

- Anglo-American Brush Electric Light Corporation, Limited, 108, Belvedere-road, Lambeth, London, S.E. Brush system.  
 Apps, A., 433, Strand, London, W.C.  
 BERLY, J. A., C.E., A.S.T.E., & E., 16, New Bridge-st., London, E.C. Agent for Hajnia (of Prague) Patent Arc Lamp, and Mondon Patent Arc Lamp, &c. See *index to advertisers*.  
 BLEWS, WILLIAM & SONS, 9 to 15, New Bartholomew-st. Birmingham. Don Moltschanoff, Negharv. Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies.

**Electric Lamp Manufs.—Arc—**

- BRITISH ELECTRIC LIGHT CO., Ltd.  
 Offices and works Turk's Head-yard, mill-street, London, E.C. Brockie Arc and other Lamps. British Incand.-scent.  
 Chadburn & Son, Telegraph Works, Warrington, Liverpool.  
 CLARK, CLARK & BOWMAN, 411, Strand, London, S.W. See *index to advertisers*.  
 CROMPTON, R. E. & CO., 4, Queen Victoria-st., London, E.C. Crompton system. See *index to advertisers*.  
 CLARK (J.), MUIRHEAD & CO., 9, Abchurch-lane, London, S.W. Andrews' & Dr. Hopkinson's system.  
 Dale, H. & E. J., 4, Little Britain E.C. Ludgate-hill, London, E.C. See *index to advertisers*.  
 DEFRIES, J., & SONS, 147, Holborn, London, E. See *index to advertisers*.  
 Edmunds, Henry, 2, Victoria Mansions, Victoria-st., London, S.W. See *last page of advertiser*.  
 Electric Lighting Supply & Fitting Co., Office and Works 28, York-street, London, S.W. See *index to advertisers*.  
 Electric "Sun" Lamp & Power Co., Ltd. St. Margaret's Offices, Victoria-street, London, S.W.  
 Francis & Co. F. R. Francis, C.E., Manager. Eagle Telegraph Works, Hatton-garden & Lawford-road, London, N.W.  
 Gulcher Electric Light & Power Co., 4, Old Bailey, London, E.C. Works, Bow Foundry, London, S.W.  
 Groth, L. A., 30, Finsbury-pavement, London, E.C.  
 HENLEY'S, W. T. TELEGRAPH WORKS CO., Limited. Offices: 8, Drapers'-gate, London, E.C.  
 Horry, W. S., 19, Bishopsgate-street, London, E.C.  
 INTERNATIONAL ELECTRIC CO., Ltd. 4, Copthall-bldgs, Throgmorton-street, London, E.C.  
 Johnson & Phillips, 14, Union-court Old Bailey, London, E.C., and Victoria Charlton, S.E.  
 Lever Charles. Calceeth-hall, Bowden, Cheshire.  
 LEVY, ARMAND, Electrical Sundries 252, Goswell-road, London, E.C. & 4, de Ruysbroek, Brussels. Agent for the Canon, Luchausse and other lamps. All hand lamps always on hand. Construct any system for the trade.  
 Main, W., 44, Geneva-road, Brixton, London, S.W.  
 METROPOLITAN BRUSH ELECTRIC LIGHT & POWER CO. LIMITED. Cannon-st., London, E.C.  
 UPPERMAN BROS., Bow house-yard, St. John-st. London, E.C. See *index to advertisers*.  
 PATERSON & COOPER, 76, Little Britain, London, E.C. See *index to advertisers*.

**Lamp Manufrs. Arc—continued.**

\* Son, 529, King's-road, Chelsea, S.W.

"JOEL," & GENERAL ELECTRIC LIGHT CO., LIMITED, St Stephen's-st., Telegraph-st., London, E.C. See *advertisers*.

BROS., 12, Wharf-road, City-road, N.

A. R. Electrical Engineering Works, Garden, London, E.C.

Bros., 13 & 14, King-st., Cheapside, E.C. Sole manufacturers of the Arc Lamps, of 50, 100, and 200 power. See *index to advertisers*.

Bros. & Co., Ltd., 12, Queen Anne's-Vestminster, London, S.W. (Siemens')

Glendening, St. Paul's-buildings, 21, Water-row, London, E.C.

J. Berger & Co., 31, Lombard-street, E.C.

Co., 14, Finsbury-square, London, E.C. Manufacturing Co., Vulcan Works, Water-street, City Garden-row, London, N. Sidney F. & Oliver, 195, Severn-road, and at Nottingham.

Irish, 30, Borough-road, Sunderland.

F. L., 92, Mile End-road, London, E. HOUSE & RAWSON, 11, Queen Vic-  
toria-st., London, E.C. Models made and  
tests carried out. See *index to advertisers*.

**Electric Lamp Manufacturers—  
Incandescent.**

*Les électriciens à Incandescence (Fab de).*  
—*Electrische Lampen—Glühlucht.*

483, Strand, London, W.C.

LONG, STEVENS & CO., 15, High-street, Birmingham.

J. A., C.E., A.S.T.E., &c., 16, New-st., London, E.C. Agent for Nothomb's Incandescent Lamp, 10 to 300 Candle  
See *index to advertisers*.

WILLIAM & SONS, 9, to 15, New-st., Birmingham. Dom Moltes-Neghuny, Moscow, and 38, West-st., London, E.C. Contractors to the  
of Moscow, Mexico, San Paulo, &c.  
Japanica.

ERNEST, 33, Northampton-street, E.C. Manufacturer of incandes-  
lamps and vacuum tubes.

ELECTRIC LIGHT CO., LIMTD, and Works. Turk's Head-yard, Turn-  
bet, London, E.C.

A. & E. J., 4, Little Britain, E.C. Ludgate-hill, London, E.C.

Henry, 2, Victoria Mansions, Victoria-  
don, S.W. See *last page of advertisements*.  
J. & Co., 19, Gt. George-street, S.W.

**Electric Lamp Manufacturers—  
Incandescent—continued.**

Electric Lighting Supply & Fitting Co., Ltd., Office and Works: 28, York-st., London, S.W. See *index to advertisers*.

Francis & Co (F. R. Francis, C.E., manager), Eagle Telegraph Works, Hatton-garden, E.C., and Lawford-road, London, N.W.

Gulcher Electric Light & Power Co., 4, Coleman-street, E.C. Works: Battersea Foundry, London, S.W.

Horry, W. S., 19, Bishopsgate-st.-within, London, E.

METROPOLITAN (BRUSH) ELECTRIC LIGHT & POWER CO., LIMITED, 110, Cannon-st., London, E.C.

OPPERMANN BROS., Brewhouse-yard, 172, St. John's-st., London, E.C. See *index to ad-  
vertisers*.

"PILSEN," "JOEL," & GENERAL ELEC-  
TRIC LIGHT CO., LIMITED (THE), St. Stephen's-chambers, Telegraph-street, London, E.C. See *index to advertisers*.

Reid Brothers, 12, Wharf-road, City-road, London, N.

Sennett, A. R., Electric Engineering Works, Hatton-garden, London, E.C.

SHIPPEY BROS., -

13 & 14, King-street, London, E.C. Sole  
Manufacturers of the  
Incandescent Glow Lamp.  
The most Economical and  
Brilliant Lamp. Price  
Lists on application. See  
*index to advertisers*.



Siemens Bros. & Co., Limited, 12, Queen Anne's-  
gate, London, S.W. (Swan system.)

Spence, J. Berger & Co., 31, Lombard-street, London, E.C.

Vulcan Manufacturing Co., Vulcan Works, Rocliffe-street, City Garden-row, London, N.

Wauthier, J., 53, Red Lion-st., London, E.C.

WOODHOUSE & RAWSON, 11, Queen Vic-  
toria-st., London, E.C. All kinds of lamps  
made to order. Experiments carried out.  
Sole Makers of Woodhouse & Rawson's patent  
incandescent lamps; every variety of E.M.F.  
and candle power, from 1 to 100, kept in stock.  
Specialties in surgical lamps. See *index to  
advertisers*.

**Electric Launches.**

F.—*Bateaux électriques.*

G.—*Electrische Baste.*

Binswanger, G. & Co., 29, Aldermanbury, London, E.C.

Bogle, Gilbert & Co., 47, Oswald-st., Glasgow.

Duncan Brothers, 32, Queen Victoria-st., Lon-  
don, E.C.

Francis & Co. (F. R. Francis, C.E., manager), Eagle Telegraph Works, Hatton Garden, Lon-  
don, E.C., and Lawford-rd., London, N.W.



## Electric Launches—continued.

Goold, G. D. & Co., 27, Broomwood Road, Wandsworth-common, London, S.W.  
 Sennett, A. R., Electrical Engineering Works, Hatton-garden, London, E.C.  
 Spence, J. Berger & Co., 31, Lombard-street, London, E.C.  
 Vulcan Manufacturing Co., Vulcan Works, Roccliffe-st., City Garden-row, London, N.  
 YARROW & CO., ISLE-OF-DOGS, MANCHESTER-ROAD, LONDON, E.

## Electric Light Apparatus and Fittings Manufacturers.

*F.—Appareils pour la lumière électrique.*

*G.—Apparate für electrische Beleuchtung.*

ANDERSON & MUNRO, 136, Bothwell-st., Glasgow.  
 Appleby & Stamps, 29, Graham-st., Birmingham.  
 Applegarth, R., 11, Queen Victoria-st., London, E.C.  
 Apps, A., 433, Strand, London, W.C.  
 ARMSTRONG, STEVENS & CO., 15, Whittall-st., Birmingham.  
 Ashbury, W. H., Atlas Works, Grantham.  
 BARWELL, SON & FISHER, Waltham-bdgs., Holborn-circus, London, E.C. Manufactory, Worcester Works, Clement-st., Birmingham.  
 Bayley Bros., Sherborne Works, Sherborne-st., Walsall.  
 Bemrose & Sons, Derby.  
 Bennett, Henry, & Co., 131, Hope-st., Glasgow.  
 BLEWS, WILLIAM & SONS, 9 to 15, New Bartholomew-st., Birmingham, Dom Moltshanoft Negliuny, Moscow; and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. (Established 1782.)  
 British Electric Light Co., Limited. Office and Works: Turk's Head-yd., Turnmill-st., London, E.C.  
 Carpenter & Ford, Cranmer Works, Bishop-st.-south, Birmingham.  
 CLARK L., MUIRHEAD & CO., 23, Regency-st., London, S.W.  
 Consolidated Electric Company, Limited, 110, Cannon-st., E.C.; Factory, 68, Cowcross-st., London, E.C.  
 CROMPTON, R. F. & CO., 4, Queen Victoria-st., London, E.C.  
 Dale, H. & E. J., 4, Little Britain, London, E.C., & 26, Ludgate-hill, London, E.C. *See index to advertisers.*  
 Davis & Timmins, Bowling Green-lane, London, E.C.  
 DEFRIES, J. & SONS, 147, Houndsditch, London, E. *See index to advertisers.*  
 Edmunds, Henry, 2, Victoria Mansions, Victoria-st., London, S.W. *See last page of advertisements.*  
 Edmundson, J. & Co., 19, St. George-st., London, S.W.

## Electric Light Apparatus and Fittings Manufacturers—continued.

Electric Appliance Company, Trafalgar Square, Charing-cross, London, W.C.  
 Electric Light Association, 9, Victoria-st., London, S.W.  
 ELECTRIC LIGHTING SUPPLY & FITTINGS CO., LIMITED (Manager, W. Adams). Office and works, York-st., London, S.W. *See index to advertisers.*  
 ELECTRIC "SUN" LAMP & POWER CO., Limited, St. Margaret's Offices, Victoria-st., London, S.W.  
 Electrical Trading Company, 23, Farringdon-st., London, E.C.  
 Elliott Bros., 101, St. Martin's-lane, Strand, London, W.C.  
 Faraday & Son, 3, Berners-st., Oxford-st., London, W.  
 Ford, Thos., 86, Emily-st., Birmingham  
 Gent, J. T. & Co., Faraday Works, Richard's-rd., Leicester.  
 Glover, W. T. & Co. Chief office: 25, St. Andrew-st., Manchester. London Office: 28, Finsbury-row, E.C. Glasgow office: 85, Buchanan's Greenway, G., 48, Llanarth-st., 2 Mon.  
 Groth, L. A., 30, Finsbury-pavement, London, E.C.  
 Gülicher Electric Light & Power Co., Ltd., Coleman-st., London, E.C. Works: 1, Foundry, S.W.  
 Hammond & Co., Zetland-bdgs., Middlesex  
 Hardman, Powell & Co., King Edwards-st., Birmingham.  
 Heaton, Ralph & Sons, Icknield-st., Birmingham  
 HENLEY'S (W. T.) TELEGRAPH & POWER CO., LTD. Offices: 8, Drapers'-gdn, London, E.C.  
 Horton, Edward, 151, Strand, London, W.C.  
 Hunt, J. & Co., 35, Snow-hill, London, W.C. Works: Birmingham.  
 India Rubber, Gutta Percha & Telegraph Cable Company, Limited, 100, Cannon-st., London, E.C.  
 INTERNATIONAL ELECTRIC CO., Ltd., 1, Pall-mall-bdgs, London, E.C.  
 Joel, Henry F., C.E., 9, Tower-chamber, Mark Lane, London, E.C.  
 JOHNSON & PHILLIPS, 14, Union-st., Broad-st., London, E.C., & Victoria-st., Charlton, S.E.  
 JONES & WILLIS, 43, Great Russell-st., London, W.C.  
 Jones & Willis, 15 & 16, Temple-row, London, W.C.  
 LAING, WHARTON & DOWN, 8 & 9, Abchurch-lane, London, E.C.  
 Lége, Annibal & Co., 75, Turnmill-st., London, E.C.  
 LEVY, ARMAND, 252, Goswell-road, London, E.C.; & 42, Rue de Ruysbreck, Brussels. *See index to advertisers.*



**Electric Light Apparatus and Fittings Manufacturers—continued.**

cal Appliance Co., Parliament-st.,  
gham.

POLITAN (BRUSH) ELECTRIC  
T & POWER CO., LIMITED, 110,  
n-st., London, E.C.

Rich., 54, St. Enoch's-sq., Glasgow.

MAN BROS., Brewhouse-yard, 172, St.  
-st., London, E.C.

SON & COOPER, 76, Little Britain,  
n, E.C. *See index to advertisers.*

IN, JOEL," & GENERAL ELEC-  
LIGHT CO., LIMITED, St. Stephen's-  
Telegraph-st., London, E.C. *See index  
rtisers.*

r Lamp & Lighting Co., Ltd., Lindsley  
Worsley, Manchester.

ROS., 12, Wharf-road, City-road, Lon-  
i.

on, Ellson & Co. Works: 243½, High  
m, London, W.C.

A. R., Electrical Engineering Works,  
1-gdn., London, E.C.

Bros. & Co., Limited, 12, Queen Anne's-  
London, S.W.

& GLENDENING, St. Paul's-bdgs.,  
ternoster-row, London, E.C.

JAS. & SONS, High-st., Lambeth, Lon-  
E.

William & Co. (Limited), Vincent Works,  
n, S.W.

Co., Limited, South Benwell, Newcastle-  
ne.

Tunncliffe & Co. (China), Eastwood,  
y. London agent, Edwin Fox, 9, Bart-  
buildings, Holborn-circus, London, E.C.

& Brown, 16 & 17, Kirby-st., Lon-  
E.C.

Bros., office and manufactory, Heddon-  
gent-st., London, W.

B. & Sons, King-st., Covent-garden,  
n, W.C.

Manufacturing Co., Vulcan Works,  
e-st., City-garden-row, London, N.

Sidney F. & Oliver, 195, Severn-road,  
l, and at Nottingham.

has. A., Etna Works, Lewes, Sussex.

I. J. & Co., 116 & 118, Southwark-  
-road, London, S.E.

has. & Co., 41, Holborn-viaduct, Lon-  
E.C.

HOUSE & RAWSON, 11, Queen Vic-  
t., London, E.C. *See index to advertisers.*

**Electric Light Companies.**

*Eclairage électrique (Compagnies d')*  
*Gesellschaften für elektrische Beleuchtung.*

, J. D. F., Woodside Works, South  
side-road, Glasgow.

merican (Brush) Electric Light Corpora-  
(limited), 108, Belvedere-road, Lambeth,  
n, S.E.

**Electric Light Companies—continued.**

Anglo-Spanish "Brush" Electric Light &  
Power Company, Limited, 110, Cannon-st.,  
London, E.C.

Atlas Electric Appliances Company, Limited, 2,  
Great Winchester-st., London, E.C.

Australasian Electric Light Power and Storage  
Company, Limited, 41, Coleman-st., London,  
E.C.

British Electric Light Company, Limited, 78,  
Turnmill-st., London, E.C. *See index to  
advertisers.*

Brush Electric Light and Power Company of  
Scotland, Limited, 9, New Broad-st., London,  
E.C. *(In liquidation.)*

BRUSH MIDLAND ELECTRIC LIGHT  
& POWER CO., LIMITED, 4, Great Win-  
chester-st.-buildings, London, E.C.

Eastern Electric Light & Power Co., Limited,  
19, Great Winchester-street, London, E.C.

Economic Electric Company, Limited, 9, Soho-  
sq., London, W.

Edison's Electric Light Co., Limited, 19, Vic-  
toria-buildings, Manchester. Teleph. No. 532.

Edison & Swan United Electric Light Co., Ltd.,  
74, Coleman-street, London, E.C.

Edison's Indian and Colonial Electric Company,  
Limited, 4 and 6, Throgmorton-avenue, Lon-  
don, E.C.

Electric Lighting Contract and Maintenance  
Company, Limited, 1, Queen Victoria-street,  
London, E.C. *(In liquidation.)*

Electric Sun Lamp and Power Company, Limited,  
St. Margaret's Offices, Victoria-st., London,  
S.W.

Electrical Power Storage Co., Limited, 4, Great  
Winchester-street-buildings, London, E.C.

ELECTRO-MOTIVE FORCE CO., LIMITED,  
6, South Hanover-street, Glasgow.

French Electrical Power Storage Co., Limited,  
71, Queen-street, London, E.C.

French Metropolitan General Electric Company,  
Limited, 71, Queen-st., London, E.C.

Gérard Electric Light Co., 11, Queen Victoria-  
street, London, E.C.

Great Western Electric Light & Power Co., 4,  
Great Winchester-st.-buildings, London, E.C.

Gülcher Electric Light & Power Co., Limited,  
4, Coleman-street, London, E.C. ; works,  
Battersea Foundry, London, S.W.

Hammond Electric Light & Power Supply Co.,  
110, Cannon-st., London, E.C.

Indian and Oriental Electrical Storage and Works  
Company, Limited, 19, Great Winchester-st.,  
London, E.C.

INTERNATIONAL ELECTRIC CO., LMTD.,  
4, Copthall-buildings, Throgmorton-street,  
London, E.C.

Jablochkoff Electric Light and Power Company,  
Limited, 2, Great Winchester-st., London, E.C.

Lancashire Maxim Electric Co., Limited,  
14A, Peter's-lane, Liverpool. (W. H. E.  
Thompson, manager).

## Electric Light Companies—continued.

- Liverpool Electric Supply Co., Limited (The), 1, Crosshall-st., Liverpool.
- Lyon's Electrical Power Storage Co., Limited, Mansion House Chambers, 11, Queen Victoria-st., London, E.C.
- Maxim Weston Electric Company, Limited, 47, Cannon-st., London, E.C.
- Metropolitan "Brush" Electric Light and Power Company, Lim., 110, Cannon-st., London, E.C.
- NATIONAL CO. FOR THE DISTRIBUTION OF ELECTRICITY BY SECONDARY GENERATORS, LTD., 18, Warwick-st., Regent-st., London, W.
- Northern Electric Light, Power & Appliances Co., Ltd. (The), 104, Commercial-st., Dundee.
- "PILSEN," "JOEL," & GENERAL ELECTRIC LIGHT CO., LIMITED, St. Stephen's-chambers, Telegraph-st., E.C. *See index to advertisers.*
- Provincial (Brush) Electric Light & Power Co., Limited, 110, Cannon-street, London, E.C. (G. Offor, man.).
- River Plate Telephone & Electric Light Co., Limited, 34, Walbrook, London, E.C.
- Siemens Bros., & Co., Limited, 12, Queen Anne's-gate, London, S.W.
- South African (Brush) Electric Light & Power Co., Lim., 5, Copthall-buildings, London, E.C.
- South Eastern (Brush) Electric Light & Power Co., Limited, 110, Cannon-st., London, E.C.
- Stuart Electric Light & Power Company, Limited, 11, Queen Victoria-st., London, E.C.
- TASKER, SONS & CO., New Station-rd., Sheffield.
- Union Electric Light and Power Company, Limited, 2, Copthall-buildings, Throgmorton-st., London, E.C.
- Universal Electric Light Company, 13 and 14, King-st., London, E.C.
- Woodhouse & Rawson, 11, Queen Victoria-st., London, E.C. *See index to advertisers.*

## Electric Light Pole Manufacturers.

F.—

G.—

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## Electric Lighting Tackle Makers.

F.—*Palans (Fab. de) pour l'Eclairage électrique.*

G.—*Taumacher für Electriche Beleuchtung.*

- Electric Lighting Supply and Fitting Co., Limited (Manager, W. Bridges Adams), office & works, 28, York-st., London, S.W. *See index to advertisers.*
- Gülcher Electric Light & Power Co., Limited, 4, Coleman-st., London, E.C.; works, Battersea Foundry, London, S.W.
- Sennett, A. R., Electrical Engineering Works, 62, Hatton-garden, London, E.C.
- Walker, Sidney F. & Oliver, 195, Severn-road, Cardiff, and at Nottingham.

## Electric Locks.

F.—*Serrures électriques.*

G.—*Electriche Schlösser.*

- Apps, A., 433, Strand, London, W.C.
- Baughan, W. H. & Co., Charlbury, Oxon
- Chubb & Son, 128, Queen Victoria-st., I E.C.
- Hobbs, Hart & Co., 76, Cheapside, London

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F.—*Appareils servant aux mesures électri*

G.—*Electriche Mass-Instrumente.*

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- Blakey, Emmott & Co., Northern Tel Works, Halifax; and 55 and 56, Southa buildings, Chancery-lane, London, W.
- FOXCROFT, WM. M., 36, Percival-st., C well, London, E.C.
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- Kelso & Co., 43, Union-street, Glasgow.
- PATERSON & COOPER, 76, Little l London, E.C.
- Theiler, M. & Sons, 86, Canonbury-rd., I N.
- Walker, Sidney F. & Oliver, 195, Sever Cardiff, and at Nottingham.

## Electric Railway System.

- BAUER & CO., 6, Union-ct. Chambe Broad-st., London, E.C. Danchell's p

## Electrical Switch Manufacture

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G.—*Electriche Weichen.*

- Apps, A., 433, Strand, London, W.C.
- Askham Bros. & Wilson, Limited, Yo Steel Works, Napier-street, Sheffield. way switch & crossing manufacturers.
- Blakey, Emmott & Co., Northern Te Works, Halifax; and 55 and 56, Southa buildings, Chancery-lane, London, W.
- CUTTRISS & CO., 72, New Briggate, I
- DEFRIES, J. & SONS, 147, Houn London, E. *See index to advertisers.*
- Garnham & Co., Sash-ct., Wilson-st., I E.C. *See index to advertisers.*
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- KING & CO., Western Electric Works, Wine-street, Bristol.
- Martin, A., 54, Percival-street, Clerl London, E.C. *See index to advertisers.*

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Glendenning, St. Paul's-buildings, 21, Foster-row, London, E.C.

. Berger & Co., 31, Lombard-street, 1, E.C.

Sidney F. & Oliver, 195, Severn-road, , and at Nottingham.

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*G.—Electrische Spielzeug.*

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Appliance Co., Trafalgar-buildings, g-cross, London, S.W.

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*G.—Electrische Strassenbahnen.*

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*F.—*

*G.—*

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*G.—Electrische Condensatoren.*

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*G.—Electrische Instrumente.*

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Becker, F. E., & Co., 34, Maiden-la., Covent-garden, London, W.C.

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 Dring & Fage, 145, Strand, London, W.C.  
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 Electrical Appliances Syndicate, Limited, 8, Union-ct., Old Broad-st., London, E.C.  
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 Garnham & Co., Sash-ct., Wilson-st., Finsbury, London, E.C. (*See index to advertisers.*)  
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 HARVEY & PEAK (successors to W. Ladd & Co.), Beak-st., Regent-st., London, W.  
 HENLEY'S, W. T., TELEGRAPH WORKS COMPANY, LIMITED, offices, 8, Drapers'-gardens, London, E.C. *See index to advertisers.*  
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 Insulite Company, Limited, 11, Delahay-st., Gt. George-st., London, S.W.  
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 Kelways Electric Log Syndicate, Limited (Ed. J. Morris, Sec.) 58, Lombard-st., London, E.C.  
 Koerber, J. A., 41, Frith-st., Soho-sq., London, W.  
 Lancaster, Jas., & Son, 37, Colmore-row, B'ham.  
 LEJEUNE & PERKEN, 101, Hatton-garden, London, E.C.  
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 Negretti & Zambra, Holborn-viaduct, I  
 E.C.  
 Oakley, W. H., & Co., 202, Grange-rd., I  
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 Norfolk-st., Southsea.  
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 Reid Bros., 12, Wharf-rd., City-rd., Lond  
 Sadler, Michael, 19, Aston-st., Birmingham  
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 marine service, galvanometers, resistance  
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*See index to advertisers.*  
 Snell & Glendening, St. Paul's-bldgs.,  
 noster-row, London, E.C.  
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 Terry, Henry, 229b, Camberwell-rd., I  
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 Theiler, M., & Sons, 86, Canonbury  
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 London, E.  
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**Electrical Publications.**

rician, published at 386, Strand, London,

trician (of New York), published by  
ms & Co., 115, Nassau-street, New York.  
s for Great Britain, Wm. Dawson & Sons,  
annon-street, London, E.C.

**ELECTRICAL REVIEW & Telegraphic**  
l (H. Alabaster & Co.), 22, Paternoster-  
ondon, E.C.

trical Review (of New York). G. Worth-  
, editor; T. H. Delano, publisher,  
rk-row (rooms 14 & 15), New York.

**ELEGRAPIST.** Wm. Lynd, editor,  
xbridge-rd., London, W.

**UNIVERSAL ELECTRICAL DIREC-**  
(J. A. Berly's), publishers, Wm. Daw-  
Sons, 148 and 149, Upper Thames-st.,  
n, E.C.

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G.—*Electrische Specialitäten.*

, 433, Strand, W.C.

& CO., The Pottery, Fulham, London,  
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knobs, insulators. Government con-  
s for the above. (Established 1671).  
*See index to advertisers.*

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C.

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ulo, &c. Gas Companies.

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n Governments, Railway Companies, &c.  
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l cost. *See index to advertisers.*

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avenue, Hammersmith, London, W.

Electric Portable Battery and Gas Igniting Co.,  
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Faraday & Son, 3, Berners-st., London, W.

Francis & Co. (F. R. Francis, C.E., Manager),  
Eagle Telegraph Works, Hatton-garden, E.C.,  
and Lawford-road, London, N.W.

Fry, J. O., National Telephone Co., Nottingham,  
patent soldering iron for telegraph & telephone  
wires.

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Specialities—oils for dynamo and gas engines.  
Garnham & Co., Sash-ct., Wilson-st., Finsbury,  
London, E.C. *See index to advertisers.*

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Richard's-rd., Leicester. *See index to advertisers.*

GRIFFITH & CO., 4, Queen Anne's-gate, London,  
S.W. Works, Reading. *See index to advertisers.*  
Gülcher Electric Light & Power Co., Limited,  
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Foundry, S.W.

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London, W.C.

Hygienic & Electric Association, Limited, 93,  
Regent-st., London, W.

Kelway's Electric Log Syndicate, Limited, 58,  
Lombard-street, London, E.C.

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don, W.

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F. Wyndham, manager.

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carried out.

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Marsh & Co., 18, New Bridge-st., Blackfriars,  
London, E.C. *See index to advertisers*

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Sheffield.

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wires, caps for telegraph posts, knobs for  
street lamps, crucible and all kinds of porous  
ware and stoneware for chemical or electrical  
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Winter, F., 138, London-wall, London, E.C.  
*See index to advertisers.*

WOODHOUSE & RAWSON, 11, Queen  
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out and experiments made. *See index to  
advertisers.*

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*G. Verfertiger von electrischen Artikeln.*

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buildings, Chancery-lane, London, W.C. *See  
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## Electrical Sundries Manufacturers

*Dealers—continued*

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cow, and 38, West Smithfield, London  
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of advertisements.*

Electric Agency, 20, Great St. Helen's, E  
E.C.

ELECTRO-MOTIVE FORCE CO., 4,  
Hanover-street, Glasgow.

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London, E.C. Turners of electrical  
work in vulcanite, ebonite, ivory, etc  
*index to advertisers.*

Garnham & Co., Sash-st., Wilson-st., F  
E.C. *See index to advertisers*

HARBURG INDIA RUBBER COM-  
138, London Wall, London, E.C.

LEVY, ARMAND, Electrical Sundries  
Goswell-rd., London, E.C., and 42,  
Ruyssbroeck, Brussels

London Electric and Magnetic Association  
Eastcheap, London, E.C. Established  
F. Wyndham, manager.

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MORRIS, TIMOTHY, 3 & 4, Market-  
tingham.

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Robey, J. T., 194, Bow-road, London, E

Stopes & Co., 24A, Southwark-street, Lond

Woodhouse & Rawson, 11, Queen Vict  
London, E.C. *See index to advertisers.*

Ycarton, H., 353, Old Kent-road, London

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*G.—Probirinstrumente für Electricität*

Abbey & Co., 12, White Hart-st., Cal  
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Apps, A., 413, Strand, London, W.C.

Garnham & Co., Sash-st., Wilson-st., F  
London, E.C. *See index to advertisers.*

Groves, W., 89, Belsover-st., Fitzroy-  
London, W. Professor Hughes' In-  
Balance

Gulcher Electric Light & Power Co., 2  
4, Coleman-st., London, E.C. Works,  
801 Foundry, S.W.

HARVEY & PEAK, 11A, Beak-st., B  
London, W.

**cal Testing Instrument Makers—**  
*continued.*

Y'S, W. T., TELEGRAPH WORKS  
LIMITED. Offices, 8, Drapers'-gardens,  
n, E.C.  
M. & Sons, 86, Canonbury-road,  
n, N.  
HOUSE & RAWSON, 11, Queen  
ia-st., London, E.C.

**trical Water-Level Apparatus**  
**Makers.**

, 433, Strand, London, W.C.  
Manufacturing Co., Vulcan Works,  
e-st., City-garden-row, London, N. *See*  
*o advertisers.*

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*F.—Electriciens.*

*G.—Electricitäts-kundige.*

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e, London, W.C.  
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road, London, S.W.  
Ian Charles, 433, Strand, London, E.C.  
aniel, 90, St. John-st.-rd., London, E.C.  
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Kensington-park, London, W.  
C., Woodlands-road, Redhill.  
, J. A., 16, New Bridge-st., London,  
*See index to advertisers.*  
W. & Co., Henry-st., Huddersfield.  
F., 44, Upper George-st., Bryanstone-  
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B., & Co., Corn Exchange-buildings,  
ng-lane, London, E.C.  
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n, W.  
R, CHARLES FRIEND, 76, Little  
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n, W.  
& E. J., 4, Little Britain, London, E.C.  
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1, Alex., 47, London-st., Glasgow.  
A., 10, Berkeley-gardens, Camden-hill,  
ngton, London, W.  
Wm. H., 48, Hindon-st., Pimlico, Lon-  
.W.  
son, J. & Co., 19, Great George-st.,  
minster, London, S.W.  
Dynamic Co. of Philadelphia (general  
C. R. Heap), Archway-house, Bush-lane,  
n, E.C.

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Ellis, W., Royal Observatory, Greenwich, S.E.  
Enright, James, West Kensington-park, Lon-  
don, S.W.  
Faulkner, J., 13, Great Ducie-st., Manchester.  
Faulkner, W. G. & Co., 16, Endell-st., London,  
W.C.  
French, A. St. Geo. & Co., 21, Finsbury Pave-  
ment, London, E.C.  
Frost, A. J., 6, Westminster-chambers, Victoria-  
st., London, S.W.  
Fynn & Carle, 22, Pigott-st., London, E.  
Galton, Capt. D., 12, Chester-st., Grosvenor-  
place, W.  
Gatehouse, T., *Electrical Review*, 22, Paternoster-  
row, London, E.C.  
Gaulard, Lucien, 18, Warwick-st., Regent-st.,  
London, W.  
Glover, T. G., Col. R.E., Stapenhill, Sydenham-  
hill, London, S.E.  
Goldenberg, L., 110, Hemingford-rd., London, N.  
Graves, James, Anglo-American Telegraph Co.,  
Limited, Valentia, Ireland.  
Greener, J. H., 14, St. Swithin's-la., London, E.C.  
Gümpel, Charles Godfrey, 49, Leicester-square,  
Leicester, W.C.  
Hannington, George H., 42, Spencer-st., Gos-  
well-road, London, E.C.  
Heap, C. R., Archway-house, Bush-lane, Lon-  
don, E.C.  
Henry & Co., 98, Borough-road, London, S.E.  
Hintz, Julius, 21, Liverpool-st., London, E.C.,  
and Eagle Wharf, London, N.  
Hughes, Professor D. E., care of London Joint  
Stock Bank, 92, Pall Mall, London, S.W.  
Iglesia, A., 30, Bardolph-rd., London, N.  
JAMIESON, ANDREW, C.E., F.R.S.E., *Prin-*  
*cipal*, College of Science and Arts, 38, Bath-  
st., Glasgow.  
Jarman, A. J., 25, Richmond-st., St. Luke's,  
London, E.C.  
Jones, Thomas John, 12, Princes-st., Hanover-  
square, London, W.  
Kabath de, N., 57D, Hatton-garden, London, E.C.  
LAVENDER, JNO., 11, Todd-st., Corporation-  
st., Manchester.  
Lee, Allen, 3, Camden-cottages, Camden-road,  
London, N.  
Liley, W. & Co., 10A, Church-alley, Liverpool.  
Lowden, Geo., Reform-st., Dundee.  
Lund, J. A., 19 and 21, Queen Victoria-st.,  
London, E.C.  
McEVOY, CAPTAIN C. A., 18, Adam-st.,  
Adelphi, London, W.C.  
Marr, Jno. Jackson, 31, Moorfields, Liverpool.  
Mathieson, J., India Rubber Company, Silver-  
town, London, E.  
Muirhead, Dr. A., Oakwood, 12, Farquhar-road,  
Upper Norwood, London, S.E.  
PATERSON, EDWARD, 76, Little Britain,  
London, E.C.  
Parsons & Cobon, Fountain Works, Chiswick  
Mill, London, W.

## Electricians—continued.

Piggott, William P., 16, Argyll-st., Regent-st., London, W.  
 Redmond, D. D., M.D., 126, Sandford-rd., Dublin.  
 REYNOLDS, W. T., Ph.D., 2, St. Helen's-terrace, Mile End-road, London, E.  
 Robisher, J., 49, Ardwick-green, Manchester.  
 Sabine, R., Grosmont-house, Hampton-wick, Middlesex.  
 Sharples, Chas. H., F.C.S., A.S.T.E., and E., 7, Fishergate, Preston.  
 Sharples, G., 7, Fishergate, Preston.  
 Siemens Bros. & Co., Limited, 12, Queen Anne's-gate, London, S.W.  
 Society of Telegraph-Engineers and Electricians, 4, The Sanctuary, Westminster, S.W. *For List, &c., see Contents.*  
 Stead, Frank V., 50, Lombard-st., London, E.C.  
 Thistleton, John B., 1, Old Quebec-st., London, W.  
 Tiddy, Wm. N., 12, Princes-st., Hanover-sq., London, W.  
 Welsh, B. W., 22, Harrington-sq., Hampstead-rd., London, N.W.  
 Webber, Lieut.-Col. C. E., Alvercliffe, Gosport, Hants.  
 WHITING, HENRY GOTHWICKE, A.P.S. & M.S.A., 11, Poultry-chambers, London, E.C.  
 Wigner & Harland, 37, Lombard-st., and 38, Holborn-viaduct, London, E.C.  
 Wood, Henry George, South Eastern Railway Telegraph Department, London-bridge, S.E.

## Electricians—Consulting.

*F.—Electriciens.*

*G.—Electricitätskundige.*

Apps, A., 433, Strand, London, W.C.  
 Ayrton & Perry, Telpher House, 73, Gt. Eastern-st., London, E.C.  
 BRUSH MIDLAND ELECTRIC LIGHT & POWER CO., LIMITED, 4, Gt. Winchester-st.-buildings, London, E.C.  
 CARUS-WILSON C. A., 11, Queen Victoria-st., London, E.C.  
 Cooke, Conrad W., 5, Westminster-chambers, Victoria-st., London, S.W.  
 Foster, Professor G. C., 12, Hilldrop-road, Brecknock-road, London, N.  
 GARNETT, W., Professor, University College, Nottingham.  
 GARNHAM & CO., Sash-court, Wilson-st., Finsbury, London, E.C. *See index to advertisers.*  
 Goold, G. D. & Co., 27, Broomswood-road, Wandsworth-common, London, S.W.  
 GRIFFITH & CO., 4, Queen Anne's-gate, London, S.W. Works, Reading.  
 Groth, L. A., 30, Finsbury-pavement, London, E.C.  
 HOLMES, NATH. J., 8, Great Winchester-st., London, E.C.  
 JENKINS, FLEEMING, LL.D., F.R.S., 3, Great Stuart-st., Edinburgh.  
 Joel, Henry F., C.E., 9, Tower-chambers, Moor-gate-st., London, E.C.

## Electricians—Consulting—continued.

Johnson & Phillips, 14, Union-court, Old st., London, E.C., and Victoria Works, ton, London, S.E.  
 Koerber, J. A., 44, Frith-st., Soho-sq., London, W.  
 MOLISON, A. R., 17, Fern-terrace, Swanley, Kent.  
 Zanni, D., 34, Charles-st., Hatton-garden, E.C.  
 Phillips Bros., Lea Telegraph Works, Hatton-garden, London, E., late of Mackintosh & Co., Homerton, London, E.  
 Rogers, F. M., 21, Finsbury-pavement, London, E.C.  
 Spiller, Geo., 3, Wigmore-st., Cavendish-square, London, W.  
 Walker, Sidney F. & Oliver, 195, Severn-st., Cardiff, and at Nottingham.  
 WOODHOUSE & RAWSON, 11, Queen Victoria-st., London, E.C. Reports, tests, and experiments made.

## Electricians—Domestic.

*F.—Electriciens.*

*G.—Electriker.*

Apps, A., 433, Strand, London, W.C.  
 Baughan, W. H. & Co. Charlbury, Oxon.  
 Burley, William, Tower Chambers, London, E.C.  
 BRYDEN, JOHN & SONS, 2, Bulstrope-st. (corner of Welbeck-st.), Cavendish-square, London, W., 90, Gloucester-rd., South Kensington, London, S.W., and at 16, Fife-st., Edinburgh; 24, Renfield-st., Glasgow; Princes-st., Perth; Commercial-st., London, E.C. Established 1809. *See index to advertisements.*  
 Electric Appliance Co., Trafalgar-buildings, Charing-cross, London, S.W.  
 Francis & Co. (F. R. Francis, C.E.), Main Eagle Telegraph Works, Hatton-garden and Lawford-road, London, N.W.  
 Goold, G. D. & Co., 27, Broomswood-rd., Wandsworth-common, London, S.W.  
 Hall, Edward, 39, Westmoreland-place, London, N. *See index to advertisements.*  
 KING & CO., Western Electric Works, 1, Wine-street, Bristol.  
 KOERBER, J. A., 44, Frith-street, Soho, London, W.  
 NEW & CO., 44, Dean-st., Oxford-st., London, W.C.  
 SIGNAL ENGINEERING CO., 181, Holborn, London, W.C.  
 Sutcliffe, J. L., 153, South-st., Moor, Sheffield.  
 Walker, Sidney F. & Oliver, 195, Severn-st., Cardiff, and at Nottingham.

## Electricians—Manufacturing

*F.—Machines électriques (Fab. de).*

*G.—Fabrikanten von electrischen Apparaten.*

Abney & Co., 12, White Hart-st., Catherham, London, W.C.  
 Anderson & Munro, 136, Bothwell-st., Glasgow.  
 Apps, A., 433, Strand, London, W.C.



## **cians—Manufacturing—continued.**

W. H. & Co., Charlbury, Oxon.  
H., 18, Percival-st., Clerkenwell, E.C.  
*See index to advertisers.*

Y, EMMOTT & CO., Northern Tele-  
Works, Halifax; and 55 and 56,  
ampton-buildings, Chancery-lane, Lon-  
W.C. *See index to advertisers.*

H. & Co., 75, Blackfriars-rd., S.E., 59  
Kirby-st., Hatton-garden, London, E.C.  
S, WM & SONS (Estd. 1782), 9 to 15,  
Bartholomew-st., Birmingham; Dom  
hanoff, Negliuny, Mexico, and 38, West  
field, London, E.C. Contractors to the  
of Moscow, Mexico, San Paulo, &c.  
companies.

LE, W. A., 91 and 92, Constitution-hill,  
ingham.

LA, L., 147, Holborn, London, E.C.  
lated Electric Co., Limited, 110, Cannon-  
ondon, E.C.

ederick J., 27, Endymion-road, Brixton  
London, S.W.

& Co., 72, New Briggate, Leeds.

H. & E. J., 4, Little Britain, E.C., & 26,  
ite-hill, London, E.C. *See index to  
isers.*

ic Electric Company, Limited, Economic  
s, Durham-st., Strand, London, W.C.

Construction and Maintenance Company,  
ed, 23, Queen Victoria-st., London, E.C.

Dynamic Co. of Philadelphia (C. R.  
general agent), Archway-house, Bush-  
London, E.C.

Bros., 101, St. Martin's-lane, and 449,  
l, London, W.C.

& Co. (F. R. Francis, C.E., manager),  
Telegraph Works, Hatton-garden, E.C.,  
awford-road, London, N.W.

n & Co., Sash-court, Wilson-street,  
ury, London, E.C. *See index to advertisers.*

G. D. & Co., 27 Broomwood-road,  
lsworth Common, London, S.W.

. A., 30, Finsbury-pavemt., London, E.C.

n, Cox-Walker & Co., 4, High-row,  
ngton. *See index to advertisers.*

EY'S, W. T., TELEGRAPH WORKS  
PANY, Limited, Offices, 8 Drapers'-  
ns, London, E.C.

& Co., 103, New Oxford-st., London,

Co., 43, Union-street, Glasgow.

& CO., Western Electric Works, Narrow  
-street, Bristol.

; J. A., 44, Frith-street, Soho-square,  
on, W.

ARMAND, 252, Goswell-rd., London,  
and 42, Rue de Ruysbrück, Brussels.  
rical sundriesman. Construction of all  
s of machines and instruments. Inven-  
carried out.

Electric Light & Power Co., 27, Great  
re-street, London, S.W.

## **Electricians—Manufacturing—continued.**

Maggregor & Higgs, 20, George-st., Edinburgh.

MAYFIELD, J. T., 41, Queen Victoria-street,  
London, E.C.

New & Co., 44, Dean-st., Oxford-st., London, W.

NEWNHAM, F., 21, Compton-street, Goswell-  
road, London, E.C.

NORMAN & SONS, 217 to 223, Argyle-street,  
Glasgow, and at Barrow-in-Furness.

OPPERMANN BROTHERS, Brewhouse-yard,  
172, St. John-street, London, E.C. *See index to  
advertisers.*

ORME, J. & CO., 65, Barbican, London, E.C.

PATERSON & COOPER, 76, Little Britain,  
London, E.C. *See index to advertisers.*

Patrick & Son, 529, King's-road, Chelsea,  
London, S.W.

Pyramid Electric Company, Limited, Whitecroft,  
near Lydney, Gloucestershire.

Reid Bros., 12, Wharf-rd., City-rd., London, N.

SAX, JULIUS, 108, Great Russell-st., Blooms-  
bury, and Bedford Telegraph Works, Store-st.,  
Bedford-square, London, W.C.

SHARPLES, G., 7, Fishergate, Preston.

SIGNAL ENGINEERING COMPANY, 181,  
High Holborn, London, W.C. *See index to  
advertisers.*

SNELL & GLENDENING, St. Paul's-buildings,  
21, Paternoster-row, London, E.C. *See index  
to advertisers.*

Spiller, George, 3, Wigmore-st., Cavendish-sq.,  
London, W.

Sutcliffe, J. L., 153, South-st. Moor, Sheffield.

Theiler, M. & Sons, 86, Canonbury-road,  
London, N.

Tyer & Co., Ashwin-st., Dalston-junction,  
London, E.

Vulcan Manufacturing Company, Vulcan Works,  
Rocliffe-st., City Garden-row, London, N.  
*See index to advertisers.*

Walker, Sidney F. & Oliver, 195, Severn-road,  
Cardiff, and at Nottingham.

Weedon & Irish, 30, Borough-road, Sunderland.

Weston, G., 92, Mile End-road, London, E.

Whalley A., 71, Fleming-square, Blackburn.

White, James, 241, Sauchichall-st., Glasgow.

WOLVERHAMPTON ELECTRIC LIGHT  
STORAGE COMPANY (Thomas Parker and  
P. Bedford Elwell), Commercial-road Works,  
Wolverhampton.

## **Electricians—Medical.**

*F.—Electricité—médicale.*

*G.—Electrotherapie.*

DARLOW & CO., 443, Strand, London, W.C.

GARRATT, B. C., 16, Finsbury-square, London,  
E.C. *See Magnetic Curative Appliances Mfts.*

Grigg, W., 34, Eastbourne-terrace, Paddington,  
London, W.

Humm, M., 727, Commercial-road, London, E.

## Electricians—Surgeons.

*F.—Chirurgiens électriciens.*

*G.—Chirurgen—Electr.*

Lobb, H., 66, Russell-square, London, W.C.

## Electric Meters—Makers of.

*F.—Instruments de précision.*

*G.*

Apps, A., 433, Strand, London, W.C.

GRIFFITH & CO., 4, Queen Anne's-gate  
London, S.W.; works, Reading.

Joel, Henry F., C.E., Tower-chambers, Moor-  
gate-street, London, E.C.

Varley Patents Proprietary Co., Limited, Mild-  
may Park Works, London, N.

WOODHOUSE & RAWSON, 11, Queen Vic-  
toria-street, London, E.C.

## Electro Depositors.

*F.—Electro depositions.*

*G.—Galvanisatoren für Kunstsachen.*

Baughan, W. H. & Co., nickel and silver platers  
to the trade, Charlbury, Oxon.

FOXCROFT, WILLIAM M. Works of art in  
stock, panels for cabinet makers, and all kinds  
of electrotyping for the trade, 36, Percival-st.,  
London, E.C. *See index to advertisers.*

Gülcher Electric Light and Power Company,  
Limited, 4, Coleman-street, London, E.C.;  
Works, Battersea Foundry, London, S.W.

OPPERMANN BROS., Brewhouse-yard, 172,  
St. John-street, London, E.C.

## Electro Metallurgist.

*F.—*

*G.—*

BUCK, C., electro gilding and plating, 20, St.  
John's-lane, London, E.C.

Electro Amalgamator Company, Limited, Tower-  
chambers, Moorgate-st., London, E.C.

ELECTROLYSIS COMPANY, LIMITED, 49,  
Queen Victoria-st., London, E.C.

King, J. W., 15, St. John's-square, Clerkenwell,  
London, E.C. Holder of certificate from City  
and Guilds of London Institute.

## Electro-Motor Manufacturers.

*F.—Electro moteurs (Fab. d').*

*G.—Electrische Motors.*

Apps, A., 433, Strand, London, W.C.

Binswanger, G. & Co., 29, Aldermanbury, Lon-  
don, E.C.

Blakey, Emmott & Co., Northern Telegraph  
Works, Halifax; and 55 and 56, Southampton-  
buildings, Chancery-lane, London, W.C.

Clark, M., 43, Renfield-street, Glasgow.

CROMPTON, R. E., 4, Queen Victoria-st., Lon-  
don, E.C. (The Būrgin.) *See index to advertisers.*

CUTTRISS & CO., 72, New Briggate, Leeds.

DALE, H. & E. J., 4, Little Britain, and 26,  
Ludgate-hill, London, E.C.

Duncan Bros., 32, Queen Victoria-st., London,  
E.C.

## Electro-Motor Manufacturers—

Electric Lighting Supply and fitting C  
Limited, office and works, 28, 1  
Westminster, London, S.W.

Electro Dynamic Company of Phil  
(C. R. Heap, general agent), Archway  
Bush-lane, London, E.C.

Goold, G. D. & Co., 27, Broomsw  
Wandsworth-common, London, S.W.

Gülcher Electric Light and Power C  
Limited, 4, Coleman-street, E.C.;  
Battersea Foundry, S.W.

Howe Machine Company, Limited  
Universal," Avenue-st., Bridgeton, G

Immisch, Moritz, Electric Works, Pe  
Ryland-rd., Kentish Town, London, 1

KING & CO., Western electrical works,  
Wine-st., Bristol.

Kinetic Engineering Company 1, W  
place, Doctor's-commons, London, E.C

Koerber, J. A., 44, Frith-st., Soho-sq., Lo  
OPPERMANN BROS., Brewhouse-ya

St. John-st., London, E.C.

Sennett, A. R., electrical engineering  
Hatton-garden, London, E.C.

SNELL & GLENDENING, St. Paul'  
21, Paternoster-row, London, E.C.

Spence, J. Berger & Co., 31, Lombard  
London, E.C. *See index to advertisers.*

Theiler, M., & Sons, 86, Canonbury-ro  
don, N.

Toynbee, H., 18, Malvern-villas, Willead  
Vulcan Manufacturing Company, Vulcar

Rocliffe-street, City-garden-row, Lon  
Walker, Sidney F. & Oliver, 195, Seve

Cardiff, and at Nottingham.

WEEDON & IRISH, 30, Borough-road,  
land.

Woodhouse & Rawson, 11, Queen Victor  
London, E.C.

## Electro-Plate Manufacturers & I

*F.—Plaqué (Fab. et Marchands de,*

*G.—Galvanische Versilberer.*

Adkins, H. & Sons, 4, Thavies-inn, Lond

Atkins Bros., 11, Charterhouse-st., Lond

Blewitt, E., 69, Hatton-garden, London

Bolton, J., & Sons, 64, George-street  
Birmingham.

Bourne, O'Neil, 9, Fenchurch-st., Lond

Collis & Co., 57, Cambridge-street, Birn

Fairbairns, W. & Sons, 65, St. Mary-a  
don, E.C.

Favell, R. & F., Bucknall-st., New O  
London, W.C.

Gilbert, J. & Co., Limited, 25, E  
Holborn, London, E.C.

Goodfellow & Son, 29, Hatton-garden,  
E.C.

Hand & Son, St. Mary's-chambers, St. M  
London, E.C.

Harrison, W. W. & Co., 99, Hatton  
London, E.C.

**Electro Plating and Depositing Machine Manufacturers—continued.**

Son, 67, 68 & 69, Houndsditch,  
 & Co., electro-plate manufac-  
 nickel silver refiners, Peel-street,  
 ton.  
 Sons, 13, Thavies-inn, Holborn-  
 on, E.C.  
 o., 58, Houndsditch, London, E.  
 & Co., 10, Dyer's-buildings,  
 ndon, E.C.  
 y J., 108, 109, 110, Gt. Charles-  
 ingham.  
 Sons, 32, Hatton-garden, London,  
 s, 2, Devonshire-square, Bishops-  
 Without, London, E.  
 all, 14, St. Mary-axe, London, E.C.  
 , 28, Holborn-viaduct, London, E.C.  
 , 24, Holborn-viaduct, London, E.C.  
 arles J., 49, Fore-st, London, E.C.

**Platers' and Electrotypers' Material Manufacturers.**

*Plaque (Fournitures pour).*  
*und Galvanoplastik—Materialien für.*  
 ton, 4, High-st., Sheffield.  
 Company, Charlotte-st., Black-  
 London, S.E.  
 & BROS., Brewhouse-yd., 172,  
 London, E.C.

**Platers' Supply Factors.**

W. & J., 3, Augusta-st., Bir-

**Platers and Gilders.**

*—Doreurs et argenteurs.*

*G.—Versilberer.*

T., 47, Berwick-st., Soho, Lon-

ALL & CO., LIMITED, 22, Ely-  
 -circus, London, E.C.

, 9, Northampton-st., Birmingham.  
 , 153, South-st., Moor, Sheffield.

**Electro Plating and Depositing Machine Manufacturers.**

*pour dorure, argenture et galvanoplas-  
 tie (Fab. de).*

*Maschinen zum Versilbern.*

, 91 & 92, Constitution-hill, Bir-  
*See index to advertisers.*

nry, 2, Victoria-mansions, Vic-  
 ndon, S.W. *See last page of*  
*s.*

Company, Charlotte-st., Black-  
 n, S.E.

**Electro Plating and Depositing Machine Manufacturers—continued.**

Gülcher Electric Light and Power Company, 4,  
 Coleman-st., London, E.C.; works, Battersea  
 Foundry, London, S.W.

LEVY, ARMAND, electrical sundriesman, 252,  
 Goswell-rd., London, E.C., and 42, Rue de  
 Ruysbroeck, Brussels. Importer of foreign  
 machines. Second-hand machines always in  
 hand.

OPPERMANN BROS., Brewhouse-yard, 172,  
 St. John's-st., London, E.C.

Walker, Sidney F. & Oliver, 195, Severn-rd.,  
 Cardiff, and at Nottingham.

WOLVERHAMPTON ELECTRIC LIGHT,  
 STORAGE AND ENGINEERING COM-  
 PANY (Thomas Parker & P. Bedford Elwell),  
 Commercial-rd. Works, Wolverhampton.

Woodhouse & Rawson, 11, Queen Victoria-st.,  
 London, E.C.

**Electrolier Fitters.**

*F.—Electroliers (Poseurs d').*

*G.—Candalaber für elektrische Lampen—Einrichter.*

ARCULUS, ALF., 295, Broad-st., Birmingham.

BARWELL, SON & FISHER, Worcester  
 Works, Clement-st., Birmingham.

BLEWS, WILLIAM, & SONS (Established  
 1782), 9 to 15, New Bartholomew-street, Bir-  
 mingham; Dom Moltshanoff, Negliuny, Mos-  
 cow; and 38, West Smithfield, London, E.C.  
 Contractors to the Cities of Moscow, Mexico,  
 San Paulo, &c. Gas Companies.

Smith & Chamberlain, 3, New Bartholomew-st.,  
 Birmingham.

Winfield, Robert Walter & Co., Cambridge-st.  
 Works, Birmingham, and Holborn-viaduct,  
 London, E.C.

WOODHOUSE & RAWSON, 11, Queen Vic-  
 toria-st., London, E.C. Work done at shortest  
 notice. *See index to advertisers.*

**Electrolier Manufacturers.**

*F.—Electroliers (Fab. d').*

*G.—Candalaber für Electriche Lampen.*

ARCULUS, ALFRED, 295, Broad-st., B'ham.

ANDERSON & MUNRO, 136, Bothwell-st.,  
 Glasgow.

Barclay & Son, 138, Regent-st., London, W.

Barnes & Co., 311, Broad-st., Birmingham.

BARWELL, SON & FISHER, Worcester  
 Works, Clement-st., Birmingham.

Bennett Bros., St. Thomas's-bldgs., Liverpool.

Berry, Z. D., & Sons, 16, Regency-st., Lon-  
 don, S.W.

Besson, F., & Co., 198, Euston-rd., London, N.W.

Biggs, John, 31 & 102, Borough-rd., London, S.E.

BLEWS, WILLIAM, & SONS (Established  
 1782), 9 to 15, New Bartholomew-street, Bir-  
 mingham; Dom Moltshanoff, Negliuny, Mos-  
 cow; and 38, West Smithfield, London, E.C.  
 Contractors to the Cities of Moscow, Mexico,  
 San Paulo, &c. Gas Companies.

## Electrolier Manufacturers—continued.

Boseck, Paul, 14, South-st., Finsbury, London, E.C.  
 Bray, George & Co., Blackman-lane, Leeds.  
 Brown & Co., 186, Piccadilly, London, W.  
 Buchan, T. & Sons, 249, Argyle-st., Glasgow.  
 Buchan, H., 50, Oswald-st., Glasgow.  
 Bucknall, A., 19, Renshaw-st., Liverpool.  
 Carpenter & Ford, Cranmer Works, Bishop-st. South, Birmingham.  
 Catterson, Samuel Prince, 34 & 36½, Gt. Dover-st., London, S.E.  
 Coleman, G. T., 9, Cheapside, Leicester.  
 Cooper, William, & Son, 65, St. Mary Axe, London, E.C.  
 Davis, Moses, & Co., 27, Wellclose-square, London, E.  
 DEFRIES & SONS, 147, Houndsditch, London, E. *See index to advertisers.*  
 Dietz & Co., St. Paul's-buildings, Carter-lane, Cannon-st., London, E.C.  
 Earl & Philp, 113, London Wall, London, E.C.  
 Electric Lighting Supply and Fitting Company, Limited, office and works, 28, York-st., Westminster, London, S.W. Manager, W. Bridges Adams. *See index to advertisers.*  
 Evered, R., & Co., Limited, 27, Drury-lane, London, W.C.  
 Fairbairns, W. & Sons, 65, St. Mary Axe, London, E.C.  
 Faraday & Son, 3, Berners-st., London, W. *See index to advertisers.*  
 Felton, T., Yates-st., Birmingham.  
 Fleay, J. M., 72, Cable-st., Liverpool.  
 FORREST, G., & SON, 23, New-street-square, London, E.C.  
 Fowles, Thomas, & Co., 200, Ebury-st., London, S.W.  
 Gardners, 453, Strand, W.C., & 4 & 5, Ducannon-st., London, W.C.  
 Green, Jas., & Nephew, 107, Queen Victoria-st., London, E.C.  
 Greene, H., & Son, 153, Cannon-st., London, E.C.  
 Halls, Chas. Ellis, 74, St. George-st., London, E.  
 Hinrichs, C. F. A., 42 & 44, Cannon-st., London, E.C.  
 Hodge & Co., 100 & 101, Hatton-garden, London, E.C.  
 Hughes, Rich. Hugh, 96, Hatton-garden, London, E.C.  
 Hulett, D., & Co, 55., High Holborn, London, W.C.  
 Hutchinson, Thos., 67, Grainger-st., Newcastle.  
 Ingram & Kemp, 103, Hatton-garden, London, E.C.  
 Jones & Willis, 43, Gt. Russell-st., London, W.C.  
 Kaester & Toebelmann, 14, South-st., Finsbury, London, E.C.  
 Koeppen & Wenke, St. Mary's-chambers, St. Mary Axe, London, E.C.  
 Kuhne, Gebrüder, 47, Basinghall-st., London, E.C.  
 LAING, WHARTON & DOWN, 8 & 9, Holborn-viaduct, London, E.C.  
 Meek, James & Co., 13, Picardy-pl., Edinburgh.

## Electrolier Manufacturers—continued.

Moenich, Oscar & Co., 8, Coleman-st., E.C.  
 Moore & Co., 2, Judd-st., London, W.C.  
 Napper, Sidney, 9, Fenchurch-st., London.  
 OSLER, F. & C., 230 & 231, Broad-st., London.  
 Patton, George, Neville-st., Newcastle.  
 Perry & Co., 72, New Bond-st., London.  
 Phillips, W. P. & G., 155, New Bond-st., London, W.  
 Pillischer, Moritz, 88, New Bond-st., London.  
 Pontifex, Samuel & Co., 22, Coleman-st., London, E.C.  
 Prince & Symmons, 128, 130, Commercial-st., London, E.  
 Ratcliff, Edmund, 59, St. Paul's-square, London.  
 Schlesinger, A. & Co., 8, Coleman-st., London, E.C.  
 Sigrist, Richard, 30, Tustin-st., Old Kent-road, London, S.E.  
 Smith & Chamberlain, 3, New Bartholomew-st., Birmingham.  
 South Kensington China, Glass & Lacquer Co., Coleherne-ter., Richmond-rd., London.  
 Strode & Co., 48, Osnaburgh-st., London.  
 Taylor Bros., 232, Bradford-st., Birmingham.  
 Tomlinson & Rettich, 34 & 35, Gerrard-st., London, W.  
 Verity Bros., office and manufactory, 1, Regent-st., London, W.  
 VERITY, BENJAMIN & SONS, 1, KING-ST., COVENT-GARDEN, London, W.C. Telephone No. 2648. Patent cup and ball joint for electroliers. Tel. "Electrolier, London."  
 Wagner & Goldschmidt, 14, South-st., London, E.C.  
 Walker, Sidney F. & Oliver, 195, Seely-st., Cardiff, and at Nottingham.  
 Whitmore, J., 40, Wellington-st., Leicester.  
 Wilson, William & Co., 50, 52 & 54, Market-st., Manchester.  
 Winfield, Robert Walter & Co., Camliffe Works, Birmingham, and Holborn-st., London, E.C. Gold Medal (Rappin Exhibition, 1878).  
 WOODHOUSE & RAWSON, 11, Queen Victoria-st., London, E.C. Stock kept and drawings supplied for special work.  
 Woolerton, T., 81, High-st., Leicester.  
 Wright & Butler, Limited, 68, Commercial-st., London, E.  
 Wright, John & Co., 1, Little Bush-lane, London, E.C.  
 Zimmermann & Co., 21, Red Lion-square, London, W.C.

## Electrotypers.

*F.—Electrotype.*

*G.—Galvaniscur.*

Brinkworth, W. H., Caledonian Works, Barn-road, Birmingham.  
 Bullen, T. E. H., 28, Warwick-lane, London.



**pers—continued.**

Lanner, 18, Paternoster-sq., London,  
 . A., 91 & 92, Constitution-hill, B'ham.  
 , A. R., & Co., 8, Stanhope-st., Strand,  
 W.C.  
 & Son, 28, Old-st., Aldersgate-st.,  
 E.C.  
 J. & M., 166, Buchanan-st., Glasgow.  
 R, F., & CO., 1 & 2, Goldsmith's-  
 reat New-st., Fetter-lane, London, E.C.  
 a, Koolman & Isger, Harp-alley, 82,  
 lon-st., London, E.C.  
 & Co., 151, High Holborn, London, W.C.  
 & Anderson, 5, West-st., Seven-dials,  
 W.C.  
 , H., 92, Blackfriars-rd., London, S.E.  
 nie Etching Company, 23, Farringdon-  
 don, E.C.  
 F., 21, Paternoster-sq., London, E.C.

**amellers of Glass and Iron.**

*F.—Emaillieurs de verre ou fer.*

*G.—Emaillieur.*

Charles (telegraph and electric light  
 87, Bishopsgate-street-without, Lon-  
 C.

**Wheel and Machinery Makers.**

*roues et machines à emeri (Fab. de).*

*G.—Schmirgelräder.*

W. A., 91 & 92, Constitution-hill,  
 ham. *See index to advertisers.*

Chas. & Co., 21, Cross-st., Finsbury,  
 E.C.

Emery Wheel Company, 56, Princess-  
 chester.

EIM, S. & CO., emery wheels, tools,  
 nding machines, genuine emery cloth,  
 st blue emery paper (Müller, Uhlich &  
 nts), 37, King William-st., London, E.C.  
 derick & Co., 9, St. Andrew's-st., Lon-  
 C. *See index to advertisers.*

IONNENTHAL & CO. ("Tanite"),  
 en Victoria-st., & Lambeth-hill, Lon-  
 C. *See index to advertisers.*

**Engine Makers—Caloric.**

*—Machines caloriques (Fab. de).*

*G.—Luftdruckmaschinen.*

ngine and Syren Fog Signals Company,  
 ge-row, Cannon-st., London, E.C.  
 bros., 32, Queen Victoria-st., London,

**Engine Makers—Gas.**

*Machines (Fab. de)—Gaz Moteurs.*

*G.—Gas-Motoren.*

J. E. H. & Co., 123A, Queen Victoria-  
 don, E.C.

**Engine Makers—Gas—continued.**

Ashbury, Sumner & Co., 28A, Market-st., Man-  
 chester.

Bakers Gas Engine Works, Scholefield-st., Bir-  
 mingham.

Benyon & Co., Torbay Iron Works, Torquay,  
 Devon.

British Gas Engine and Engineering Company,  
 Limited, 11, Queen Victoria-st., London, E.C.

Clayton, S. & Co., St. Thomas' Works, Paradise-  
 st., Bradford.

Cobham & Co., Stevenage, Herts.

Crossley Bros. ("Otto"), Manchester; London  
 office, 24, Poultry, E.C.; Glasgow office, 193,  
 Sauchiehall-st. (*See covers.*)

Duncan Bros., 32, Queen Victoria-st., London,  
 E.C.

Giddings & Dacre, Ducie-st., Manchester.

Grosty, J. & Co., Grosvenor-avenue, Victoria-  
 bridge, Deansgate, Manchester.

Griffin, Samuel, Kingston Iron Works, Ambury,  
 Bath.

Hallewell Gas Engine Company, 21, Bridge-st.,  
 Manchester.

Ladd, John, & Co., 116, Queen Victoria-street,  
 London, E.C.

London Gas Engine Company, Dalston Junction, E.  
 Mobbs, Henry, Vulcan Works, Northampton.

Orme, Fredk., & Co., 9, St. Andrew's-st., Holborn-  
 viaduct, London, E.C. *See index to advertisers.*

Picking, Hopkins & Co., 58, Bow-rd., London, E.  
 Simon, L. ("Eclipse") Nottingham.

Sterne, L. & Co., Limited, 40, Cannon-st., Lon-  
 don, E.C.

TANGYE BROS., 35, Queen Victoria-st., Lon-  
 don, E.C.

"Turner" Gas Engine Company, Limited,  
 St. Albans Iron Works, St. Albans.

Woodhead, John, R., Whitehall-road, Leeds.

**Engine and Boiler Makers—Steam  
 (Electrical Purposes).**

*F.—Machines à Vapeur (Fab. de).*

*G.—Dampf-Maschinen.*

Alloy & Maclellan, Sentinel Works, Glasgow.

Sole makers of the Westinghouse speed en-  
 gines, the most efficient for driving dynamos.

Aveling & Porter, 72, Cannon-st., London, E.C.  
 Bennett, Henry, & Co., 131, Hope-st. Glasgow.

Bernays, J., patent twin-cylinder engines, for  
 driving electric machines, very steady and  
 compact. Prize Medal, Paris Exhibition, 96,  
 Newgate-st., London, E.C.

Brotherhood, Peter, 15, Belvedere-road, West-  
 minster-bridge, London, S.E.

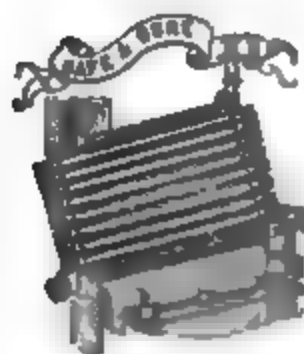
Butterworth, James, King-st. West, Manchester.  
 Steam engines and boilers.

Clayton & Shuttleworth, Stamp End Iron Works,  
 Lincoln.

DAVEY, PAXMAN & CO., The Standard Iron  
 Works, Colchester, Essex. *See index to adver-  
 tisers.*

## Engine & Boiler Makers—Steam—contd.

- Deakin, Parker & Co., Sandon Works, Salford, Manchester.
- Duncan Bros., 32, Queen Victoria-st., London, E.C.
- Flood, G. H., & Co., 25 & 27, Holland-st., Blackfriars, London, S.E.
- Fowler, J., & Co., Steam Plough Works, Loathly-lane, Hunslet, Leeds.
- Galloway, W. & Sons, Knott Mill Iron Works, Manchester.
- GREEN, J., & SON, LIMITED (W. H. Cloake, manager), Surrey Works, Blackfriars-rd., London, S.E., Makers of three-cylinder engines, specially adapted for electric lighting.
- GWYNNE & CO., Essex-st. Works, Victoria-embankment, London, W.C. Highly finished high speed engines, for driving electric machines, turbine water wheels, pumping machinery.
- Gwynne, J. & H., Hammersmith, Middlesex, W.
- Hartnell, Wilson, Benson's-buildings, Park-row, Leeds.
- Hayes, Edward, 12, Gt. St. Helen's, London, E.C. Special engines for driving electric light machinery.
- HAYES, JOHN, 27, Leadenhall-st., London, E.C., INSPECTOR OF BOILERS DURING CONSTRUCTION, ALTERATION AND SETTING.
- Hindley, E. S., Bourton, Dorset, & 52, Queen Victoria-st., London, E.C. *See index to advertisers.*
- HORNSBY, R., & SONS, 84, Lombard-st., London, E.C.
- MARSHALL, SONS & CO., LIMITED, Britannia Iron Works, Gainsborough; London office, show rooms and stores, Marshall's-bldg., 79, Farringdon-road, London, E.C. Telephone No. 6,648. Manufacturers of high speed engines for electrical purposes. *See index to advertisers.*
- MATHER & PLATT, Salford Iron Works, Manchester.
- Mandsley, Sons, & Field, Westminster-bridge-road, London, S.E.
- OLRICK, LEWIS, & CO., 27, Leadenhall-st., London, E.C. *See index to advertisers.*
- Owens, S., & Co., 22, Whitefriars-st., London, E.C.
- Patent Steam Boiler Company, 11, Queen Victoria-st., London, E.C., and 28, Hencage-st., Birmingham. Root's steam boilers, 45,000 h.p. made to 1882, unequalled for safety, efficiency, interchangeability of parts, high pressure, facility of transport, and compactness. References to eminent



firms. Full particulars free.

Penn, J., & Sons, Greenwich, London, S.E.

## Engine & Boiler Makers—Steam—

- Ransomes, Head & Jefferies, Orwell Ipswich.
- Reading Iron Works Company 1 Reading.
- ROBEY & CO., 117, Cannon-st., London, E.C. MANUFACTURERS OF HIGH ENGINES FOR ELECTRICAL PURPOSES. *See index to advertisers.*
- Rowan, F. J., 134, St. Vincent-street, (RUSTON, PROCTOR & CO., Lincoln; office, 20, Budge-row, Cannon-street, E.C. *See index to advertisers.*
- SHANKS, ALEXANDER & SON, 27, hall-st., London, E.C.
- TANGYE BROTHERS, 35, Queen Victoria-st., London, E.C.
- WELFORD BROS., King's-house Pallion, Sunderland.
- Wilson, A., & Co., Vauxhall Iron Wandsworth-road, S.W. *See index to advertisers.*
- WOLVERHAMPTON ELECTRIC 1 STORAGE AND ENGINEERING PANY (Thomas Parker and P. Elwell), Commercial Road Works, W'h

## \* Engineers—Consulting.

F.—Ingenieurs consultants.

G.—Ingenieurs.

- Barker, George, 77, Colmore-row, Birmingham.
- Cruikshank, Geo. M., 135, Buchanan-st., Glasgow.
- Jamieson, Andrew, C.E., F.R.S.E., & co., College of Science and Arts, 38, F Glasgow.

## Engineers—Electric Light.

F.—Ingenieurs—Eclairage électrique

G.—Ingenieurs—Electric Light

- Apps, A., 433, Strand, London, W.C.
- Bassingham, W. & Son, 3 and 4, Lower cross-st., London, E.C.
- Bennett, Henry, & Co., 131, Hope-st., G
- BERLY, J. A., 16, New Bridge-st., 1 E.C. *See index to advertisers.*
- BLEWS, WILLIAM, & SONS (Est 1782), 9 to 15, New Bartholomew-stre mingham; Dem Moltchanoff, Neglian cow, and 38, West Smithfield, London. Contractors to the Cities of Moscow, San Paulo, &c. Gas Companies.
- British Electric Light Company, Limited and works, Turk's Head-yard, Turm London, E.C.
- BRUSH MIDLAND ELECTRIC LIQ POWER COMPANY, LIMITED, 4 Winchester-st.-bldg., London, E.C.
- Bury, H., Manchester-chambers, 46, 1 st., Manchester.
- Chamberlain & Hookham, Limited, 4, N tholomew-st., Birmingham.
- Cooke, Conrad W., 2, Victoria-mansion toria-st., Westminster, London, S.W.

**eers—Electric Light—continued.**

ION, R. E. & CO., 4, Queen Victoria-  
ndon, E.C. *See index to advertisers.*

Winfield Electric Light Association,  
dge-st. Works, Birmingham, and 49,  
gdon-st., London, E.C. *See index to  
ers.*

, PAXMAN & CO., The Standard Iron  
, Colchester, Essex. *See index to adver-*

, P. R. F., 21, Litchfield-st., Soho,  
n, W.

, E., 14, Croxted-lane, West Dulwich,  
n, S.E.

, Henry, 2, Victoria-mansions, Vic-  
t., Westminster, London, S.W. *See  
ge of advertisements.*

son, J. & Co., 19, Gt. George-st.,  
n, S.W.

Light Carbon Company, 133A, Gt. Suf-  
., London, S.E. *See index to advertisers.*

Dynamic Company of Philadelphia (C.  
ap, general manager), Archway-house,  
ane, London, E.C.

ST, G. & SON, 23, New-st.-square,  
n, E.C.

& Co. (F. R. Francis, C.E., manager),  
Telegraph Works, Hatton-garden,  
n, E.C., & Lawford-road, London, N.W.  
muel, & Sons, 5, Marylebone-passago,  
t., London, W.

t. D. & Co., 27, Broomwood-road,  
worth-common, London, S.W.

A., 30, Finsbury-pavemt., London, E.C.  
Electric Light and Power Company, 4,  
n-st., London, E.C.; works, Battersea  
y, London, S.W.

r & Co., 4, Circus-st., York-st., Mary-  
road, London, W.

, Hugh Erat, B.Sc., F.C.S., 2, Red  
quare, London, W.C.

Wilson, Benson's-bldgs., Park-row,

Edward, 12, Gt. St. Helen's, London,  
Special engines for driving electric light  
ery.

Killingworth, 25, Queen Anne's-gate,  
inster, London, S.W.

Y'S (W. T.) TELEGRAPH WORKS  
ANY, LIMITED, offices, 8, Drapers'-  
s, London, E.C.

: Vaudrey, 1, Crosshall-st., Liverpool.  
W. C., & Co., Bradford-rd., Huddersfield.

SON, J., F.R.S., 4, Westminster-cham-  
ictoria-st., London, S.W.

, Andrew, C.E., F.R.S.E., &c., Prin-  
ollege of Science and Arts, 38, Bath-st.,  
W.

ry F., C.E., 9, Tower-chambers, Moor-  
, London, E.C.

t Phillips, 14, Union-court, Old Broad-  
ndon, E.C., and Victoria Works,  
n, London, S.E.

J. A., 44, Frith-st., Soho-sq., London, W.

**\* Engineers—Electric Light—continued.**

Laing Electric Light & Power Company, Limited,  
4 & 5, Three Crown-square, London, S.E.

LAING, WHARTON & DOWN, 8 & 9,  
Holborn-viaduct, London, E.C.

Lane-Fox, St. George, Garden-mansions, Queen  
Anne's-gate, London, S.W.

Little, James, 69, Clayton-st., Newcastle,  
Massey, Wm. H., Twyford, Berks.

NORMAN & SON, 217 to 223, Argyle-st., Glas-  
gow, and at Barrow-in-Furness.

OPPERMANN BROS., Brewhouse-yard, St.  
John's-st., London, E.C. *See index to ad-  
vertisers.*

Paul, A. Louis, A.S.T.E., 16, Kensington-sq.,  
London, W.

Raworth, John S., 6, St. Mary's-gate, Manchester.

Reid Bros., 12, Wharf-road, City-road, London, N.

ROBEY & CO., Globe Works, Lincoln. *See index  
to advertisers.*

Rowan, F. J., 134, St. Vincent-st. Glasgow.

Sennett, A. R., Electrical Engineering Works,  
Hatton-garden, London, E.C.

Sharples, G., 7, Fishergate, Preston.

SIEMENS BROS. & CO., LIMITED, 12,  
Queen Anne's-gate, Westminster, London, S.W.

Sington, A. & Co., 5, St. Peter's-square, Man-  
chester.

SNELL & GLENDENING, St. Paul's-build-  
ings, 21, Paternoster-row, London, E.C. *See  
index to advertisers.*

Starnes, J. S., & Sons, 13, Broad-st., Ratcliff,  
London, E.

TASKER SONS & CO., New Station-road,  
Sheffield. *See index to advertisers.*

WALKER, SIDNEY F. & OLIVER, 195,  
Severn-road, Cardiff, and at Nottingham.

Watson, Henry, 39, High-bridge, Newcastle.

WOODHOUSE & RAWSON, 11, Queen-Vic-  
toria-st., London, E.C. Reports, tests and  
experiments made.

**Engineers—Electrical.**

*F.—Ingenieurs—Electriciens.*

*G.—Ingenieure—Electrische.*

Anderson, Richard, F.C.S., 101, Leadenhall-  
street, London, E.C.

Andrews, J. D. F., Woodside Electric Works,  
South Woodside-road, Glasgow.

Apps, A., 433, Strand, London, W.C.

Ayrton & Perry, Telpher House, Gt. Eastern-st.,  
London, E.C.

Bailey, Geo., 55, Gray-st., Blackfriars-rd.,  
London, S.E.

BERLY, J. A., C.E., A.S.T.E., &c., 16, New  
Bridge-st., London, E.C. *See index to advertisers.*

Berry, W. D. & Sons, Brook-st., Huddersfield.

Blakey, Emmott & Co., Northern Telegraph  
Works, Halifax; and 55 and 56, Southampton-  
buildings, Chancery-lane, London, W.C. *See  
index to advertisers.*

Bland, John H. & Co., 75, Blackfriars-road,  
London, S.E.

## Engineers—Electrical *continued.*

Bowker, Wm. & Co, Henry-st., Upperhead-rd., Huddersfield

BURLEY, WM., Tower-chambers, London-wall, London, E.C.

Calder, J. J. & Co, 154, Westminster-bridge-road, London, S.E.

Carlyle, W.A., 91 & 92, Constitution-hill, Birmingham. *See index to advertisers.*

CARUS-WILSON, C. A., 11, Queen Victoria-London, E.C.

CLARK, L., MUIRHEAD & CO., 23-31, Regency-st., London, S.W.

Clark, E., 6, Westminster-chambers, London, S.W.

Cordner, Allen & Co., Leadenhall-buildings, 1, Leadenhall-st., London, E.C.

CROMPTON, R. E. & CO, 4, Queen Victoria-street, London, E.C. *See index to advertisers.*

CUTTING, R. C. & CO, Wardrobe-chambers, Queen Victoria-st., London, E.C.

Davis, J., & Sons, All Saints' Works, Derby.

Davis, J. & Co, 51, Tyrrel-st., Bradford.

Donkin & Veequary, 14, Tabernacle-walk, London, E.C.

Duncan Bros., 32, Queen Victoria-st., London, E.C.

Durham, Geo., 8, Victoria-st., Shaw-haugh, Stockport.

Edmunds, Henry, 2, Victoria-mansions, Victoria-st., Westminster, London, S.W. *See last page of advertisements.*

Electric Co, Limited, Adelphi Electric Works, Adelphi-terrace, London, W.C.

Electric Marine Governor Co., 9, Lea-pl., East India Dock-road, London, E.

Emmens, Stephen H., 8, Argyll-st., London, W.

Farmer, Robey, Brown & Co., Limited, Trent Foundry, Gainsborough, and 59 and 63, Queen Victoria-st., London, E.C.

Ferde, H. C., 6, Duke-st., Adelphi, London, W.C.

Francis & Co. (F. R. Francis, C.E., manager), Eagle Telegraph Works, Hatton-garden, London, E.C., and Lawford-rd., London, N.W.

Gale, Samuel & Sons, 5, Marylebone-passage, Wells-st., London, W.

Gardner & Co, Sash-st., Wilson-st., Finsbury, London, E.C. *See index to advertisers.*

Gent, J. T. & Co., Faraday Works, King Richard's-rd., Leicester. *See index to advertisers.*

Gérard & Company, Limited, 11, Queen Victoria-st., London, E.C.

Goold, G. D. & Co., 27, Broomwood-rd., Wandsworth-common, London, S.W.

Goold, F. D. A., 79 and 80, Hawarth's-buildings, Manchester.

Gordon, Beauchamp & Co., 27, Great George-st., Westminster London, S.W.

Greener, J. H., 14, St. Swathan's-la., London, E.C.

Greenhall, J. H., Belfast

Groth, L. A., 30, Finsbury-pavement, London, E.C.

Harrison, Cox-Walker & Co., 4, High-row, Darlington

Harrison, Hugh Erat, B.Sc., F.C.S., 2, Red Lion-sq., London, W.C.

## Engineers Electrical *continued.*

Hartnell, Wilson, M.I.M.E., Benson's-bldg, Park-row, Leeds.

Hubden, F. & Co., 7, Booth-st., Bradford

HENLEY'S W. T., TELEGRAPH WORKS COMPANY, LIMITED, offices, 8, De gardens, London, E.C.

Holmes, J. H. & Co, Newcastle

Howatson Bros., 11, Queen Victoria-st., London, E.C.

Hudson, Ridgway & Co., 6, Charles-st., Salford, Yorks.

Immisch Moritz, Electric Works, Port Ryland-rd., London, N.W.

Jamieson, Andrew, C.E., F.R.S.E., &c., 1, College of Science and Arts, 38, B Glasgow.

Jobson Brothers, Phoenix Works, Dudley

Joel Henry F., C.E., 9, Tower-chambers gate-st., London, E.C.

Kinetic Engineering Company, 1, Waterloo-place, Doctor's-commons, London, E.C.

KING & CO., Western Electric Works, 1, Wine-st., Bristol.

Kingsland & Smith, Leeds.

Koerber, J. A., 44, Frith-st., Soho-sq., London

Lang Electric Light and Power Co. Limited, 4 & 5, Three Crown-sq., London

LAING, WHARTON & DOWN, 8 and 10, born-viaduct, London, E.C.

Lane, Fox, St. George, 39A, Threadneedle Lane, London, E.C.

Legg, John, 18, Nelson-st., Swansea.

London Electrical Company, 77, Turnmill-st., London, E.C.

Lorrain, J. G., 1, Wardrobe-pl., Doctor's-commons, London, E.C.

LUMLEY, F. (The National Telephone Company, Limited), 13, Piccadilly-st., Dundee

LYND, WILLIAM, 101, Cambridge-rd., London, W.

Macintyre, Robt. & Co., 4, Bury-st., Salford, London, E.C.

Mackenzie, J. K. D., 16, Warwick-st., London, W.

MAGGREGOR & HIGGS, 20, George-st., Edinburgh.

MATHIE & PLATT, Salford Iron Works, Manchester.

MAYFIELD, J. T., 41, Queen Victoria-st., London, E.C.

McAdam & Co., 21, New Bridge-st., London

McGillivray, John, 74, John-st., City, London

Milligan, Thos., 330, Old Kent-rd., London

OPPERMANN BROS., Brewhouse-rd., London, E.C. *See index to advertisers.*

Phillips Bros., Law Telegraph Works, 1, Wick, London, E., late of Mackintosh Homerton, E. *See index to advertisers.*

Phillips, Fredk. C., 110 Cannon-st., London

Pope, Cox, Glazbrook & Co., 5, Charles-st., Portland-pl., London, W.

Probert, Isaac, 151, Penton-pl., Walsley, London, S.E.



## rs—Electrical—continued.

Josselyn & Woods, Battersea Foundry, ton-rd., London, S.W.

& CO., Globe Works, Lincoln.

nd Electric Appliance Company, Rose-rks, Polmodie, Glasgow.

. J., 134, St. Vincent-st., Glasgow.

F., London Manager Australasian Light and Power and Storage Com-imited, 41, Coleman-st., London, E.C. Sir D., Bart., M.A., Broomhill, Tun-ells.

& Co., 101, Leadenhall-st., London, E.C.

A. R., Electrical Engineering Works, garden, London, E.C.

ros. & Co., Limited, 12, Queen Anne's-ondon, S.W.

& GLENDENING, St. Paul's-build-, Paternoster-row, London, E.C. *See* .  
*advertisers.*

ti, Jas. E., 4, Circus-st., Marylebone, , W.

George, 35, Kennington-park-road, , S.E.

, SONS & CO., New Station-rd., l. *See index to advertisers.*

liam, 7, Harold-st., Bishopwearmouth, and.

Co., Ashwin-st., Dalston Junction, . E.

umuel A., 2, Hamilton-rd., London, N. , E. G. & Co., 13 & 14, Tabernacle-ondon, E.C.

idney F. & Oliver, 195, Severn-road, and at Nottingham.

: Irish, 30, Borough-rd., Sunderland.

A., 71, Fleming-sq., Blackburn.

mes, 241, Sauchiehall-st., Glasgow.

enry & Co., 37, Mill-st., Ancoats, ster.

OUSE & RAWSON, 11, Queen -st., London, E.C. Reports, tests, and ents made. *See index to advertisers.*

Mackie, 57, Gracechurch-st., London,

## neers—Electrical Consulting.

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*G.—Ingenieure—Electrische.*

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433, Strand, London, W.C.

V. E., F.R.S., Telpher-house, 73, Great -st., London, E.C.

J. A., C.E., A.S.T.E., &c., 16, New st., London, E.C. *See index to advertisers.* ofessor, Glasgow.

dward B., 31, Golden-sq., London, W.

WILSON, C. A. 11, Queen Victoria-st., , E.C.

LATIMER, 6, Westminster-chambers, t-st., London, S.W.

## Engineers—Electrical Consulting—contd.

COOKE, CORNRAD W., 2 Victoria Mansions, Victoria-st., Westminster, London, S.W.

CROMPTON, R. E. & CO., 4, Queen Victoria-st., London, E.C. Engineers to the Swan United Electric Light Co. *See index to adver-tisers.*

Crookes, Wm., 7, Kensington Park-gardens, London, W.

Duncan Bros., 32, Queen Victoria-st., London, E.C.

Edmunds, Henry, 2, Victoria Mansions, Victoria-st., Westminster, London, S.W. *See last page of advertisements.*

Francis, F. R., C.E., Eagle Telegraph Works, Hatton-garden, E.C., and Oxford-house, Law-ford-road, London, N.W.

Garnham & Co., Sash-court, Wilson-st., Finsbury, London, E.C. *See index to advertisers.*

Goold, G. D. & Co., 27, Broomswood-rd., Wands-worth-common, London, S.W.

Gordon, Beauchamp, F., 27, Great George-st., London, S.W.

Groth, L. A., 30, Finsbury-p'ment, London, E.C.

Jamieson Andrew, C.E., F.R.S.E., *principal* college of science & arts, 38, Bath-st., Glasgow.

JENKIN, FLEEMING, LL.D., F.R.S., 3, Great Stuart-st., Edinburgh.

Joel, Henry F., C.E., 9, Tower Chambers, Moor-gate-st., London, E.C.

Lea, Henry, 38, Bennett's-hill, Birmingham.

Lorrain, J. G., 1, Wardrobe-place, Doctors' Commons, London, E.C.

NORMAN & SON, 217 to 223, Argyle-st., Glas-gow, and Barrow-in-Furness.

Paul, A. Louis, A.S.T.E., 16, Kensington-st., London, W.

Perry, John, M.S.T.E., Telpher-house, 73, Great Eastern-st., London, E.C.

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Sharples, Chas. H., F.C.S., A.S.T.E. & E., 7, Fishergate, Preston.

Siemens Bros. & Co., Limited, 12, Queen-Anne's-gate, London, S.W.

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Varley Patents Proprietary Co., Limited, Mild-may-park Works, London, N.

Walker, Sidney F. & Oliver, 195, Severn-road, Cardiff, and at Nottingham.

## Engineers—Electrical Testing.

*F.—Ingenieurs—essai électriques.*

*G.—Ingenieure zum Prüfen der Electricität.*

Apps, A., 433, Strand, London, W.C.

Bailey, Geo., 55, Gray-st., Blackfrs., London, S.E.

Barrows & Stewart, Banbury.

BERLY, J. A., 16, New Bridge-st., London, E.C. *See index to advertisers.*

Blakey, Emmott & Co., Northern Telegraph Works, Halifax; and 55 and 56, Southampton-buildings, Chancery-lane, London, W.C.

## Engineers—Electrical Testing—continued.

- Brougham, Hon. Reginald, British Electric Light Company, Limited. Offices and Works, Turk's Head-yd., Turnmill-st., London, E.C.
- Clark, E., 6, Westminster-chambers, Victoria-st., London, S.W.
- CLARK, LATIMER, 6, Westminster-chambers, Victoria-st., London, S.W.
- DAVIS, Frederick, Palace-chambers, 9, Bridge-st., Westminster, London, S.W.
- Duncan Bros., 32, Queen Victoria-st., London, E.C.
- Elliott Bros., 101, St. Martin's-lane, and 449, Strand, London, W.C.
- Forbes, Professor Geo., 35, Duke-st., St. James's, London, S.W.
- Francis, F. R., C.E., Eagle Telegraph Works, Hatton-garden, E.C., and Oxford-house, Lawford-road, N.W.
- Garnham & Co., Sash-ct., Wilson-st., Finsbury, London, E.C. *See index to advertisers.*
- Gülcher Electric Light and Power Company, Limited, 4, Coleman-st., London, E.C. Works, Battersea Foundry, London, S.W.
- Harrison, Hugh Erat, B. Sc., F.C.S., 2, Red Lion-sq., London, W.C.
- HOPKINSON, J., F.R.S., 4, Westminster-chambers, Victoria-st., London, S.W.
- Jamieson, Andrew, C.E., F.R.S.E., &c., *Principal*, College of Science and Art, 38, Bath-st., Glasgow.
- Jarman, A. J., 25, Richmond-st., St. Luke's, London, E.C.
- Jennings, Geo., Palace Wharf, 67, Lambeth Palace-road, London, S.E.
- Joel, Henry F., C.E., 9, Tower Chambers, Moor-gate-st., London, E.C.
- OLRICK, LEWIS & CO., 27, Leadenhall-st., London, E.C. Consulting Engineers to the Edison Electric Light Co. *See index to advertisers.*
- SAX, JULIUS, 108, Gt. Russell-st., Bloomsbury, London, and Bedford Telegraph Works, Store-st., Bedford-sq., London, W.C.
- Siemens Bros. & Co., Limited, 12, Queen Anne's-gate, London, S.W.
- Simmons, C. J., Victoria-chmbrs., Southampton-buildings, Chancery-lane, London, W.C. *See index to advertisers.*
- WOODHOUSE & RAWSON, 11, Queen Victoria-st., London, E.C. Reports, tests, and experiments made. *See index to advertisers.*

## Engineers—Hydraulic.

F.—

G.—

- Duncan Bros., 32, Queen Victoria-st., London, E.C. *See index to advertisers.*
- Owens, S. & Co., 22, Whitefriars-st., Fleet-st., London, E.C.
- TANGYE BROS, 35, Queen Victoria-st., London, E.C.

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F.—*Ingenieurs—Phares.*

G.—*Ingenieure für Leuchtthürme.*

- Chance Bros. & Co., Lighthouse Works, S wick, Birmingham.
- Deville & Co., 23, New-st.-square, New-st., lane, London, E.C.
- Dove, J. & Co., 18, Greenside-lane, Edinb
- Duncan Bros., 32, Queen Victoria-st., L E.C.
- Edmundson, J. & Co., 19, Great Geo London, S.W.
- Simpson & Co., 101, Grosvenor-rd., London
- Smith, W., 60, Sandhill, Newcastle.
- Stevenson, D. & T., 84, George-st., Edin
- Stothert & Pitt, Newark Foundry, Lower B road, Bath.
- Wells, Geo., 12, North-st., Westminster, L S.W.
- Wilkins, W. & Co., 24 & 25, Long-acre, L W.C.

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- Britannia Company, Colchester, Essex.
- CASELLA, L., 147, Holborn, London, E.
- Cochrane, H., 58, Gt. Dover-st., London,
- Crossley Bros., Manchester; London offi
- Poultry, E.C.: Glasgow office, 193, Sa
- hall-st. *See coverers.*
- DAVEY, PAXMAN & CO., The Standar
- Works, Colchester, Essex. *See index to adve*
- Duncan Bros., 32, Queen Victoria-st., L E.C. *See index to advertisers.*
- Elliott Bros., 101, St. Martin's-lane, an
- Strand, London, W.C.
- Garnham & Co., Sash-court, Wilson-st., Fir
- London, E.C. *See index to advertisers.*
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- James'-road, London, S.E.
- GREEN, T. & SON, LIMITED, Surrey
- Blackfriars-road, London, S.E.
- GWYNNE & CO., Essex-st. Works, Vi
- embankment, London, W.C. Highly f
- high speed engines for driving electric ma
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- engines indicated; machinery sales at
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- and reports prepared; preliminary
- gratis.
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- & SMALL ARMS COMPANY, LIM
- Eagle Wharf-road, Hoxton, London, N
- Hindley, E. S., 52, Queen Victoria-st., L
- E.C. *See index to advertisers.*

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& Co.

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orn-viaduct, London, E.C. *See index to*  
*isers.*

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ng, Berks.

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& CO., 117, Cannon-st., London, E.C.  
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lting mechanical engineer and valuer.

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20, Budge-row, London, E.C. *See index*  
*ertisers.*

SONNENTHAL & CO., 85, Queen-  
ria-st. and Lambeth-hill, London, E.C.  
s, drilling and milling machines, &c.  
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*ertisers.*

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, Limited, Cornwall Works, Soho, Bir-  
am.

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n, E.

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n, N.W.

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een Victoria-st., London, E.C.

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n, Sunderland.

NS & ROBINSON, Ferry Works, Thames  
i, Surrey. *See index to advertisers.*

A. & Co., Vauxhall Iron Works, Wands-  
-road, London, S.W. *See index to*  
*isers.*

## \* Engineers—Mining.

F.—

G.—

Apps, A., 433, Strand, London, W.C.

Duncan Bros., 32, Queen Victoria-st., London,  
E.C.

ROBEY & CO., Globe Works, Lincoln. *See*  
*index to advertisers.*

Walker, Sidney F. & Oliver, 195, Severn-rd.,  
Cardiff, and at Nottingham.

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F.—*Ingenieurs—Télégraphe.*

G.—*Ingenieure—Telegraphenbau.*

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E.C.

Ansell, W. T., 66, Old Broad-st., London, E.C.

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chester.

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Manchester.

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Bickerton, J., 21, Bridge-st., Deansgate, Man-  
chester.

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Glasgow.

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Brittan & Foreman, 21, Hermes-st., Pentonville-  
rd., London, N.

British Telegraph Manufactory, Limited, 27,  
Warren-st., London, W.

Butler, Edwin, 71, Lord-st., Liverpool.

Canning, Sir Samuel, 7, Great Winchester-st.-  
buildings, London, E.C.

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E.C.

Elliott Bros., 101, St. Martin's-lane, and 449,  
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wall, London, E.

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House, Lawford-road, London, N.W.

Fuller, John Crisp, & Son, 47, Finsbury-pave-  
ment, London, E.C.

## Engineers—Telegraph—continued.

Fynn & Carle, 22, Pigott-street, London, E.  
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 Graham, D. & G., 267, Sauchichall-st., Glasgow.  
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 HENLEY'S (W.T.) Telegraph Works Company, Limited, 8, Drapers'-gds, Throgmorton-st., London, E.C. *See index to advertisers.*  
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 mingham.  
 Reid Brothers, 12, Wharf-rd., City-rd, I  
 N. *See index to advertisers.*  
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 Saunders, H. C., 66, Old Broad-st., Lond  
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 E.C.  
 Warden, W. M. & Co., 27, Great Geo  
 London, S.W.  
 Weedon & Irish, 30, Borough-rd., Sunde

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*F.—Ingenieurs—Téléphone.*

*G.—Ingenieurs—Telephon.*

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 E.C.  
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 Richard's-road, Leicester. *See index  
 certifiers.*  
 Hall, W., Pier-road, Erith.  
 Harrison, Cox-Walker & Co., 4, H  
 Darlington. *See index to advertisers.*  
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 COMPANY, LIMITED, offices:—8, D  
 gardens, London, E.C.  
 Hudson, Ridgway & Co., 6, Charles-st., B  
 Yorks.



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College of Science and Arts, 38, Bath-st.,  
W.C.

Bros., Phoenix Works, Dudley.

B. SONS & CO., New Station-road,  
W.C. See index to advertisers.

Sydney F. & Oliver, 195, Severn-road,  
E., and at Nottingham.

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Electric Company, 59, Moorgate-st.,  
E.C.

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H., & Co., 113, New Oxford-st., London,

& SON, 51 to 54, Charlotte-st., B'ham.,

Frederick, & Co., 9, St. Andrew's-st., Hol-  
viaduct, London, E.C. See index to  
advertisers.

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Victoria-st., and Lambeth-hill, London,

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tool-holders, fans, forges, &c. See index  
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E., London, E.C.

& COVENTRY, Gresley Iron Works,  
All-lane, Manchester.

L. & Son, 18, St. John's-square, Clerken-  
London, E.C.

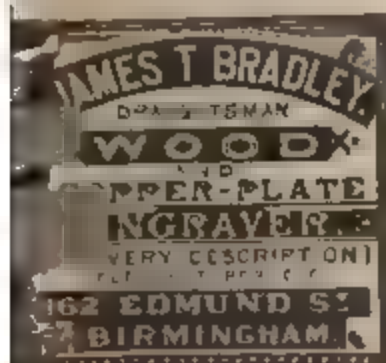
Machine Tool Co., Limited, Cornwall  
E., 35, Queen Victoria-st., London, E.C.

**Engravers on Wood.**

*F.—Graveurs sur Bois.*

*G.—Holt-bildhauer.*

Walter & Sons, 172, Strand, London, W.C.



**Engravers on Wood—continued.**

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W.C. See index to advertisers.

Eyles, John F., 39, Newhall-st., Birmingham.

HOLLIDGE, WM., 5, Fetter-lane, London, E.C.

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Snell & Glendening, St. Paul's-bldg., 21, Pater-  
noster-row, London, E.C.



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*F.—Foutro (Fab. de).*

*G.—Felt-Fabrikanten.*

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E.C.

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E.C.

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mondsey, London, S.E.

Engert & Rolfe, Barchester-street, Poplar New  
Town, London, E.

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London, E.C.

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McIlwraith, James & Co., 35, King William-  
st., London, E.C.

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row, London, E.C.

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London, E.C.

Newton, John & Co., Manor Works, Rother-  
hithe New-road, London, S.E.

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*F.—*

*G.—*

Courtenay & Trull, 17, Dey-st., New York,  
U.S.A. See index to advertisers.

**Fibre Manufacturers—Vulcanized.**

F.—

G.—

BINNEY & SON (sole agents for Scotland), 62, Queen Victoria-st., E.C., and Catherine-st., City-road, London, E.C.; 22, Wellington-st., Leeds; 50, West Howard-st., Glasgow, and 63, Broad-st., Birmingham. *See index to advertisers.*

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G.—

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G.—

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Edmunds, Henry, 2, Victoria Mansions, Victoria-st., London, S.W. *See last page of advertisements.*

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Koerber, J. A., 44, Frith-st., Soho-sq., London, W.

McWhirter, Roberts & Co., 249 and 251, East India Dock-rd., London, E. Fittings for Telegraph Cable Ships.

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F.—

G.—

BLEWS, WM., & SONS, (Establ. 1782), 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the cities of Moscow, Mexico, San Paulo, &c. Gas companies.

**\* Fittings Manufacturers for Engines and Boilers, &c.—continued.**

Duncan Bros., 32, Queen Victoria-st., London, E.C. *See index to advertisers.*

SELIG, SONNENTHAL & CO., 85, Victoria-st., and Lambeth-hill, London

**\* Flexible Tube Makers—Gas.**

F.—*Tuyaux à Gas flexibles (Fab. de)*

G.—

Britannia Rubber & Kamptulicon Co., 32, City-st., London, E.C.

Levy, Armand, electrical sundriesman, 25 Goswell-rd., London, E.C., and 42, 1 Ruysbroeck, Brussels.

Lewis, Edwin & Son, Wolverhampton.

**\* Flexible Tube Makers—Speaking.**

F.—*Tuyaux flexibles, Téléphones, etc. (Fa*

G.—*Fabrikanten für, Sprech- und Tel Röhren.*

Britannia Rubber & Kamptulicon Co., 32, City-st., London, E.C.

Foster & Williams, 87, Grange-road, Beccles, London, S.E.

Levy, Armand, electrical sundriesman, 35 Goswell-rd., London, E.C., and 42, 1 Ruysbroeck, Brussels.

**Flexible Tube Makers—Telepho**

F.—*Tuyaux flexibles.*

G.—

Britannia Rubber & Kamptulicon Co., 32, City-st., London, E.C.

Eschmann Bros. & Walsh, 23, Bartholomew-sq., Old-st., London, E.C.

Francis & Co. (F. R. Francis, C.E., Manager), Eagle Telegraph Works, Hatton C London, E.C., & Lawford-rd., London,

LEVY, ARMAND, electrical sundriesman, 35 Goswell-rd., London, E.C., and 42, 1 Ruysbroeck, Brussels.

SHEATH BROTHERS, 89, City-rd, London, E.C. *See index to advertisers.*

**Galvanic Apparatus Dealers.**

F.—

G.—

Apps, A., 433, Strand, London, W.C.

Cubley & Preston, 4, High-st., Sheffield.

Faulkner, R. C., 16, Endell-st., London, W.

Koerber, J. A., 44, Frith-st., Soho-sq., London, W.

ORME & CO., 65, Barbican, London, E.C.

Parsons, Fredk., 30, Gallowtree-gate, London, E.C.

**Galvanized Wire Manufacture**

(*See wire manufacturers—galvanized iron*)

## Galvanizers.

### F.—Galvanisers.

#### G.—Galvanisireur für Eisen.

Green, Limited, 11, Bury-st., St. James, London, E.C.

T. & Co., Albert Works, Stewart-st., Wolverhampton.

Galvanized Iron Co., 19, Grace-st., London, E.C.

A., Clarence-st., Wolverhampton.

Dore & Co., 4, Corbet-ct., Gracechurch-don, E.C.

B. & Co., 90, Cannon-st., London, E.C.

n Iron Co., Limited, Wolverhampton.

& SWINNERTON, Barrow Steel Works, Barrow-in-Furness.

os. & Co., 110, Cannon-st., London, E.C.

vanizing & Tin Coating Co., 46, Tower-s, Finsbury-pavement, London, E.C.

on Galvanizing & Metal Co., Limited, Abard-st., London, E.C.

Thomas, Ettingshall, Wolverhampton.

. & Sons, Melbourne-st., W'hampton.

WIN & CO., LIM., Offices, 5, Greatster-st., London, E.C., Works, Millwall, E.

Thomas & Co., 56, Borough-rd., North

, J. & J. & Co., 5; Middle-row, Wolver-

hampton.

W. T., TELEGRAPH WORKS LIMITED, Offices, 8, Drapers'-gardens, E.C.

ilton, 1, Pearson-st., Wolverhampton.

J. & C., Portfield Iron Works, Dudley

hampton.

Beehive Works, Tame-st., Bilston.,

nl. & Co., Drayton-st. West, Wolver-

hampton.

Galvanised Iron Company, 27, Wharf-

ty-road, London, N.

ros., 19, Gracechurch-st., London, E.C.

SON, 121, London-rd., S.E., Bishops-

C., and Battersea, London, S.W. Zinc

roofing cheapest and best, all kinds of

work galvanised, references to largest works

world, electric battery plates, &c.

Punnett & Thompson, 27, Martin's-

London, E.C.

Brown Galvanised Iron Co., 118, Cannon-

don, E.C.

OS BROS., Limited, 116, Church-st.,

Wolverhampton.

Wierick & Co., Caledonia Works, Halifax.

Edwd., Quarry-bank, Brierley-hill,

Wolverhampton.

l., 86, New John-st.-west, B'mingham.

Co., Limited, 19, Jewin-st., London,

Wolverhampton.

s Wire & Iron Co., 2, King William-

don, E.C.

## Galvanizers—continued.

Whitehouse & Co., 13, Crutchedfriars, Mark-

lane, London, E.C.

Wall, Charles & Son, 28, Holborn-viaduct,

London, E.C.

Walsh, O. S., 229, Dudley-st., Wolverhampton.

Gas Generating Machine Manufacturers.

F.—

G.—

Edmundson, J., & Co., 10, Great George-st.,

London, S.W.

Müller, H. L., Mary Ann-st., Birmingham.

Rowan, F. J., 134, St. Vincent-st., Glasgow.

Gauge and Draw-plate Makers.

F.—

G.—

Orme, Fredk. & Co., 9, St. Andrew's-st., Hol-

born-viaduct, London, E.C. See index to

advertisers.

\* Gauge Glass Manufacturers.

F.—

G.—

TOMEY & SONS, Tay Glass Works, Perth.

SELIG, SONNENTHAL & CO., 85, Queen

Victoria-st., and Lambeth-hill, London, E.C.

HOUGHTON, GEO., & SON, 89, High Holborn,

London, W.C.

\* Gauge Makers.

F.—

G.—

Haman & Buchanan, 75, Robertson-st., Glasgow.

SELIG, SONNENTHAL & CO., 85, Queen

Victoria-st., and Lambeth-hill, London, E.C.

See index to advertisers.

CASELLA, L., 147, Holborn, London, E.C.

General Suppliers of Electrical

Requisites.

F.—Fournitures générales électriques.

G.—Händler in electrischen Requisiten.

Apps, A., 433. Strand, London, W.C.

Baughan, W. H. & Co., Charlbury, Oxon. See

index to advertisers.

Clegg & Shaw, 10A, Victoria-buildings, Victoria-

st., Manchester. See index to advertisers.

Garnham & Co., Sash-ct., Wilson-st., Finsbury,

London, E.C. See index to advertisers.

Gent, J. T., & Co., Faraday Works, King

Richard's-rd., Leicester. See index to adver-

tisers.

Groth, L. A., 30, Finsbury-p'ment, London, E.C.

KING & CO., Western Electric Works. Nar-

row Wine-st., Bristol.

Liverpool Electric Supply Company, 1, Crosshall-

st., Liverpool.

Patrick & Son, 529, King's-rd., Chelsea, London,

S.W.

SNELL & GLENDENING, St. Paul's-build-

ings, 21, Paternoster-row, London, E.C.

## General Suppliers of Electrical

### Requisites—continued.

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WOODHOUSE & RAWSON, 11, Queen Victoria-st., London, E.C. Dynamos, arc and incandescent lamps, covered and bare copper wire, German silver and platinum wire, carbons, insulators, switches, brackets, electroliers, fittings, batteries, glass, oil, vulcanite, ebonite, sulphuric acid, mercury, Woodhouse & Rawson's patent incandescent lamps. *See index to advertisers.*

## German Silver Casters and Manufacturers.

*F.—Fondeurs de laiton.*

*G.—Neusilber-giesserei.*

Osborne & Co., 11, Great Garden-st., Whitechapel-rd., London, E. *See index to advertisers.*

## Glass Benders and Blowers.

*F.—Verre (l'intreurs de).*

*G.—Glas-Spanner.*

BOHM, Ernest, 33, Northampton-st., London, E.C.

BOWDEN, JOHN, 44, High-st., St. Giles', Broad-st., London, W.C.

Cetti, E., 36, Brooke-st., Holborn, London, E.C.

DEFRIES, J. & SONS, 147, Houndsditch, London, E. *See index to advertisers.*

Dickson & Head, 79, St. George-st., East Smithfield, London, E.

Emmerton, J., 13, Kirby-st., Hatton-garden, London, E.C.

Harding, Robt., Suffolk-grove, Southwark, London, S.E.

HOUGHTON, GEO. & SON, 89, High Holborn, London, W.C.

HUDSON, ALBERT GEORGE, 64, Sutton-st., Commercial-rd., London, E.

Ide, T. & W., Brook-st., Ratcliff, London, E.

Orrock, Robert, Wallis-road, Hackney-wick, London, E.

Rayment, Wm. & Co., 157, St. John-st., London, E.C.

Sharp, Hy., 59, Paul-st., Finsbury, London, E.C.

Ward, S., 24, Gt. James-st., Bedford-row, London, W.C.

Wauthier, J., 53, Red Lion-st., London, E.C.

Williams, Edmund, 79, Fairfoot-rd., Bow, London, E.

## Glass Cell (Battery) Manufacturers.

*F.—Cellules-verres.*

*G.—Glaskrüge für Electriche Batterien.*

Baughan, W. H. & Co., Charlbury, Oxon.

CADIOT, E. H., 6, Lime-st., London, E.C. (Callaud's Battery). *See index to advertisers.*

HOUGHTON, G. & SON, 89, High Holborn, London, W.C. *See index to advertisers.*

Woodhouse & Rawson, 11, Queen Victoria-st., London, E.C.

## Glass Globe Makers.

*F.—Verre (Fab. de globes).*

*G.—Glaskugeln für electriche Lampen.*

ARCULUS, ALFRED, 295, Broad-st., Birmingham. Globes for Electric Lighting in Flint, Opal, Alabaster, &c.

BELGIAN GLASS COMPANY, 1, New st., London, E.C. Globes in Opal, Opal, Alabastine, Ground, etc.

Bishop, S. & C. & Co., St. Helen's, Lancashire. BLEWS, WM., & SONS, (Etabd. 1788), 15, New Bartholomew-st., Birmingham. Moltshanoff, Negliuny, Moscow, and 30 Smithfield, London, E.C. Contractors cities of Moscow, Mexico, San Paulo, & companies.

BOGLE, GILBERT & CO., 47, Oswestry, Glasgow.

COCHRAN, A. & R., ST. ROLLOX GLASS WORKS, GLASGOW. Manufacturers of every description of cut, engraved plain table glass, gas globes, &c. SPECIAL SIGNS in GLOBES, all sizes for ELECTRIC LIGHTING for private Houses, Steamships, & Public Works.

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Greene H. & Son, 153, Cannon-st., London, E.C.

HOUGHTON, GEO. & SON, 89, High Holborn, London, W.C. *See index to advertisers.*

KIESOW & CO., 24 & 26, Basinghall-st., London, E.C. Globes for Electric Lighting.

LEVY, ARMAND, electrical sundries, Goswell-road, London, E.C., and 42, Ruysbroeck, Brussels. Globes for all kinds of lamps kept in stock in opal, alabaster and ground glass, fancy shades, all kinds. *See index to advertisers.*

Malley & Sons, 43, Parker-st., Little Queen-st., London, W.C.

OSLER, F. & C., 230 & 231, Broad-st., London, E.C.

Quitmann, Carl, Jewin-crescent, London, E.C.

Richardson, J. T. H., Castle Glass Works, Hatton, Tutbury, Burton-on-Trent.

Schölzig, O., 9, New Broad-st., London, E.C.

Smith, Charles & Son, 63, Charing-cross, London, S.W.

Tomey, Joseph & Sons, Catherine-st., Lichfield, road, Birmingham.

Walsh, John W., Works, Soho, Birmingham. Woodhouse & Rawson, 11, Queen Victoria-st., London, E.C. Coloured globes and all kinds made to order.

## \* Glass Shade Makers and Dealers.

*F.—Abats-jour en verre (Fab. de).*

*G.—Glasklucken-Fabrikanten.*

Berry, Jn. & Co., 1, New Broad-st., London, E.C.

HOUGHTON, GEO. & SON, 89, High Holborn, London, W.C.

Woodhouse & Rawson, 11, Queen Victoria-st., London, E.C. Stock kept.



**ss Shade Stand Makers.**

—*Ständer für Glaslocken.*

, WILLIAM M., 36, Percival-st., E.C. Stands of every description. *to advertisers.*

N, GEO. & SONS, 89, High Hol- lon, W.C.

**• Governor Makers.**

F.—*Régulateurs (Fab. de).*

—*Regulator-Fabrikanten.*

thers, 32, Queen Victoria-st., Lon-

W. & Co., Cottage Lane Works, London, E.C. *See index to advertisers.* ndening, St. Paul's Buildings, 21, r-row, London, E.C.

& ROBINSON, FERRY WORKS, ; DITTON, SURREY. AUTO- ELECTRIC. WILLANS' PATENT. *o advertisers.*

**Grease Manufacturers.**

F.—*Graise (Fab. de).*

F.—*Schmiere-Fabrikanten.*

. T., Ramsay-st., Rochdale.

W. A. & CO., 66, Upper Thames- n, E.C. Sole manufacturers of their INFUSIBLE GREASE for High gines.

AML., & CO., 33, Compton-st., oad, London, E.C. *See index to*

L., & Co., Palissy Soap, Grease and s, Bernard-road-park, Sheffield.

J. B., & SONS, John-st., Bramall- field; offices:—1, 3 & 5, Exchange-st., manufacturers of grease specially or driving bands and locomotives.

**Percha Covered Wire Manufacturers.**

F.—*Fils électriques.*

GEO. CROSLAND, Dee Side Works, Neston, Cheshire. *See index ers.*

**Percha Covering Machine Manufacturers.**

, ALEXANDER, & CO., 26, College- gate-hill, London, E.C. New Im- tent.

**Hoops—Steel.**

F.—

G.—

COOKES & SWINNERTON, Barrow Steel Wire Works, Barrow-in-Furness.

**India Rubber and Gutta Percha Manufacturers and Dealers.**

F.—*Caoutchouc (Fab. et Mar. de).*

G.—*Indiarubber—Fabr.*

Ancoats Vale Rubber Company, Limited, 13, Bow-lane, London, E.C.

Anderson, Abbott & Anderson, 37, Queen Vic- toria-st., London, E.C.

Allnutt, John Elliott, 75A, Little Britain, Lon- don, E.C.

Baird, Arch. & Son, 67, Robertson-st., Glasgow.

Barbican India Rubber Company, 1, Barbican, London, E.C.

Benda Bros., 5 & 6, Winchester-court, Monk- well-st., London, E.C.

BINNEY & SON, 62, Queen Victoria-st., and Catherine-st., City-road, London, E.C.; 22, Wellington-st., Leeds; 50, West Howard- st., Glasgow, and 63, Broad-st., Birmingham. Binswanger, G. & Co., 29, Aldermanbury, Lon- don, E.C.

Britannia Rubber and Kamptulicon Company, 32, Cannon-st., London, E.C.

Broadhurst & Co., 63, Bishopsgate-st. Within, London, E.C.

Carter, James Douglas, 27, St. James' Walk, Clerkenwell, London, E.C.

CLARK, SONS & CO., Failsworth, Manchester. Patent india rubber felt for packing, telegraphic and surgical purposes.

Cording, John Chas. & Co., 40, Ludgate-hill, London, E.C.

Continental Caoutchouc & Gutta Percha Co., 63, Finsbury-pavement, London, E.C.

Cooper, A. L., 9, London-st., London, E.C.

Cow (P. B.), Hill & Co., 46 & 47, Cheapside, London, E.C.

Currie, Thomson & Co., 27, Ludgate-hill, Lon- don, E.C.

Dempster, Moore & Co., 49, Robertson-st., Glasgow.

Dickson & Co., 33-35, Lowgate, Hull.

East London Rubber Company, 3, Gt. Eastern-st., London, E.C.

Edwards & Bradley, 266, South Lambeth-road, London, S.W.

FEARNS, FRANCIS H. & CO., Trafalgar Works, Old Kent-road, London, S.E.

FOSTER & WILLIAMS, 87, Grange-road, Ber- mondsey, London, S.E. India rubber and gutta percha goods of all descriptions.

Garratt, Alfred, 70, Cheapside, London, E.C.

Garrett, Geo. Wm., india rubber manufacturer, 205, Kingsland-road, London, E.

Geere, Canny & Co., 123, Fenchurch-st., Lon- don, E.C.

## India Rubber and Gutta Percha

### Manufacturers and Dealers—continued.

Glasgow Rubber Works, Maryhill-road, Glasgow.  
Glover, W. T. & Co., chief office, 25, Booth-st.,  
Manchester; London office, 28, Budge-row,  
E.C.; Glasgow office, 85, Buchanan-st.

Gutta Percha Company, 18, Wharf-rd, London, N.  
Hailwood, J. & T., Ramsay-st., Rochdale.

HARBURG INDIA RUBBER COMB COM-  
PANY, 138, London-wall, London, E.C.

Harburg & Vienna India Rubber Co., 10, Tower-  
chambers, Finsbury-pavement, London, E.C.

Harding, Cocks & Co., 29, Jewry-st., London, E.C.

Hart Bros., 40, Monkwell-st., Cripplegate, Lon-  
don, E.C.

Hewitt, C. E., 8, Chapel-lane, Hull.

Hill, Zachariah, 1, Ann-st., Union-sq., Islington,  
London, N.

Hille, Gus. L., 63, Finsbury-pavement, London,  
E.C.

India Rubber, Gutta Percha & Telegraph Works  
Co., Limited, 106, Cannon-st., London, E.C.

Irwell India Rubber & Gutta Percha Works, 6,  
Billiter-st., London, E.C.

Johnson & McBean, 4, Wellington-st., Glasgow.

Lang, Jonas & Jules, 113, Charterhouse-buildings,  
Aldersgate-st., London, E.C.

Lennard, G. H., 8 & 21, St. John-st., Hull.

LEVY, ARMAND, electrical sundriesman,  
cable wire, sheet tissue, &c., &c., 252, Gos-  
well-road, London, E.C., and 42, Rue de  
Ruysbroeck, Brussels.

Livermore, Isaac, 3, College-hill, London, E.C.

Love, Alfred & Co., Old Shot Tower Wharf,  
Commercial-road, Lambeth, London, S.E.

MacKay & Co., T. W., Stockton-st., Middlesbro'.

Mackintosh & Co., 106, Queen Victoria-st., Lon-  
don, E.C.

McLellan, Geo. & Co., 55, Robertson-st., Glasgow.

Master & Titford, Luke-st., Finsbury, London,  
E.C.

Meiter, C. W. & Co., 86, Gracechurch-st., Lon-  
don, E.C.

MOFFATT, ALEXANDER & CO., 26, College-  
st., Dowgate-hill, London, E.C.

Moseley, David & Sons, Chapel Field Works,  
Ardwick, Manchester; warehouses, 3 & 4, New  
Brown-st., Manchester; London, 1, Milk-st.,  
Cheapside; Glasgow, 57, Miller-st.

New York Hamburg Rubber Company, 8, Cole-  
man-st., London, E.C.

Nisbet, Wm., 128A, Queen Victoria-st., London,  
E.C.

NORTH BRITISH RUBBER CO., LIMITED,  
57, Moorgate-st., London, E.C.

Northern India Rubber Company, South Retford,  
Notts.

Somerville, W., 34A, Belvoir-st., Leicester.

Quin, Jas. & Co., 112, Queen Victoria-st., Lon-  
don, E.C.

Rennie, John, 138, High Holborn, London, W.C.

Richardson, Jas. Edwin, 12, Duke-st., London-  
bridge, London, S.E.

## India Rubber and Gutta Per

### Manufacturers and Dealers—co

Russell, Edwd. & Co., 34A, High Holbo-  
don, W.C.

Russell, Henry & Co., 19, Waterloo-ro-  
don, S.E.

Schoenfeld, J., 21, Jewin-crescent, Al-  
st., London, E.C.

SHEATH BROS., 89, City-road, Lond  
*See index to advertisers.*

Smith, Alex., 20, Dixon-st., Glasgow.

Spill, Geo. & Co., 256, Mile-end-road, L

Thomson, Gavin & Co., Croft-st., Deptf

Thornton, Currie & Co., 47, Jamaica-st.,  
Townshend, Edwin & Son, 25, Belved

London, S.E.

Warne, William & Co., 29, Gresham-  
don, E.C.

Winter, F., 138, London-wall, London,

## • Ink (Writing) Manufacturers—

*suitable for Telegraph Offices.*

*F.—Encre (Fab d').*

*G.—Dinte-Fabrikanten.*

COOPER & CO., 5, 6 & 7, Shoe-lane,  
E.C., manufacturers of WALKDEN'  
blue, black, writing and copying  
Established 1735.

Field, James J., manufacturer of chemi-  
corrosive inks, suitable for all clima  
Caledonian-road, London, N.

SLATER & PALMER, 8, Wine Off  
Fleet-st., London, E.C. Inks for tl  
and other telegraphic instruments.

## Insulators (Electrical) Manufac

*F.—Isoloirs (Fab. d').*

*G.—Isolatoren-Fabrikanten.*

Apps, A., 433, Strand, London, W.C.

Ashworth, G. L. & Bros., Broad-street,  
Stafford. *See index to advertisers.*

BAILEY & CO., The Pottery, Fulham,  
S.W. *See index to advertisers.*

Baughan, W. H. & Co., Charlbury, Oxe

BOURNE, JOSEPH & SONS, 6, St  
Station, Euston-rd., London, N.W.

Denby Pottery, near Derby. *See*

*advertisers.*

Buller & Co., 152 & 154, Sherlock-st., B'r

Cadiot, E. H., 6, Lime-st., London, l

*index to advertisers.*

CLARK, L., MUIRHEAD & CO., 23,

st., London, S.W.

Cliff, Joseph & Sons, 2 & 4, Wha

Northern Goods Stn., King's-cross, La

Crystal Pottery Co., Limited

Swithin's-lane, London, E.C. Wou

ridge, Stoke-on-Trent. *See index to a*

## s (Electrical) Manufrs.—continued.

mmmins, Bowling-green-lane, London,  
*See index to advertisers.*

J & CO., 28, High-st., Lambeth,  
S.E.

Watts, Lambeth Pottery, London,  
lem, Staffordshire.

Insulator Manufacturing Co., Ltd.,  
ard-st., London, E.C.

INDIA-RUBBER COMB 'CO.,  
don-wall, London, E.C. *See index to*  
*s.*

S W. T., TELEGRAPH WORKS  
NY LIMITED, offices, 8, Drapers'-  
London, E.C.

s., Phoenix Works, Dudley.

Phillips, 14, Union-court, Old Broad-  
on, E.C. and Victoria Works, Charlton,  
S.E. *See index to advertisers.*

later, 28, Hamilton-st., Birkenhead ;  
elsby.

T., Ford Pottery, Newcastle-on-Tyne,  
sample rooms: 20, Bartlett's-bldngs,  
circus, London, E.C. *See index to*  
*s.*

FOUNDRY CO., LIMITED,  
l, Notts.

MITCHELL, 68, 69, 70 & 71, Chis-  
London, E.C.

SELF BINDING TELEGRAPH  
TOR CO., LIMITED, Manager,  
Lewis, 21, Hamilton-st., Birkenhead.  
s., London sample rooms, 20, Bart-  
ldings, Holborn-circus, London, E.C.  
IONS & CO., The Old Stoneware  
, Bristol.

hers, 12, Wharf-road, City-road,  
N.

olworth-lodge, Surbiton, Surrey.

AMES & SONS, London Pottery,  
, Lambeth, London, S.E. (Established  
*See index to advertisers.*

o., 90, Hatton-garden, London, E.C.

TUNNICLIFF & CO., 9, Bartlett's-  
t, Holborn, London, E.C.

lectric Company, 59, Moorgate-st.,  
E.C.

, 138, London-wall, London. E.C.

USE & RAWSON, 11, Queen Vic-  
London, E.C. Sole-suppliers of the  
plit Insulators.

## ating Appliances—Makers.

33, Strand, London, W.C.

## nsulite Manufacturers.

INSULITE CO., LIMITED, 20,  
st., London, E.C. Works, Charlton,

## Inventors—Electrical.

*F.—Inventeurs—électriques.*

*G.—Bureau zur Ausnützung von Erfindungen.*

CUTTRISS & CO., 72, New Briggate, Leeds.

Garnham & Co., Sash-ct., Wilson-st., Finsbury,  
London, E.C. *See index to advertisers.*

Jamieson, Andrew, C.E., F.R.S.E., &c., *Principal*,  
College of Science and Arts, 38, Bath-st.,  
Glasgow.

MAYFIELD, J. T., 41, Queen Victoria-st.,  
London, E.C.

Rowan, F. J., 134, St. Vincent-st., Glasgow.

SNELL & GLENDENING, St. Paul's-build-  
ings, 21, Paternoster-row, London, E.C.

## Iridium Manufacturers and Dealers.

*F.—Iridium (Fab. et Marchands).*

*G.—Iridium-Fabrikanten.*

HOLDSWORTH, SAMUEL, 54, Spencer-st.,  
London, E.C. Speciality—Iridium Points.

Johnson, Matthey & Co., 74 to 80, Hatton-garden,  
London, E.C.

## \* Iron and Steel Manufacturers.

*F.—Fer—Fab.*

*G.—Eisen-giesserei.*

Askham Bros. & Wilson, Limited, Yorkshire  
Steel Works, Napier-st., Sheffield.

Cameron, J., & Co., 9, Oswald-st., Glasgow.

Carlaw, Coulson & Co., Iron Founders, 258,  
Castle-st., Glasgow.

Carriek & Brockbank, 26, Pall Mall, Manchester.

COOKES & SWINNERTON, Barrow Steel  
Wire Works, Barrow-in-Furness.

DAVIES, FREDERICK, Palace-chambers, 9,  
Bridge-st., London, S.W.

Duncan Brothers, 32, Queen Victoria-st., Lon-  
don, E.C.

Firth, Thomas & Sons, Whittington Iron Works,  
Chesterfield. Norfolk-works, Saville-st. East,  
Sheffield and London.

Fox & Co., 29 and 31, Carver-st., Sheffield.

Green, T. L. & Co., Gilcar File Works, 112,  
Napier-st., Sheffield.

HADFIELD'S STEEL FOUNDRY COM-  
PANY, 168, Newhall-road, Attercliffe,  
Sheffield. Steel Castings.

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Tyne. London sample rooms, 20, B  
buildings, Holborn-circus, London, E  
*index to advertisers.*

PRICE, SONS & CO., The Old Stonev  
tories, Bristol. *See index to advertis*

**Pell Manufacturers—continued.**

**JAMES, & SONS**, London Pottery,  
S.E., Established 1751. **POROUS**  
**CYLINDERS** and **PLATES** (white  
with or without glazed edges; porous  
specially hard (2nd and 3rd resistance),  
used to Postal Telegraph Department  
aromatic batteries, or sufficiently soft  
ous to suit any battery; flat porous  
ny size up to 15 in. square if required.  
edals—Paris (Electrical), 1881, Phila-  
Contractors to H. M. Post Office,  
Telegraphs, Indian and English Rail-  
., &c. *See index to advertisers.*  
**DOD & SONS**, Etruria, Stoke-on-

**rs of Electrical and Scientific  
Books, etc.**

**ie, T. & Co.**, Bunhill-row, London,  
*See index to advertisers.*  
**, C. & CO.**, Exeter-st., Strand,  
W.C. *See index to advertisers.*  
**MPSON), MARSTON, SEARLE &**  
**TON**, Crown-buildings, 188, Fleet-  
lon, E.C. *See index to advertisers.*  
**gan) Trench & Co.**, St. Paul's-build-  
ternoster-sq., London, E.C. *See index*  
*users.*

**Pulley Makers.**

*F.—Poulies (Fab. de).*

*G.—Riemscheiben—Fabr.*

**J. P. & Co.**, 4, Brabant-court, Philpot-  
ndon, E.C.  
**V. G.**, Castle Engine Works, Stafford.  
**W & SONS, ENGINEERS, BAT-**  
**ORKSHIRE. MAKERS OF TURNED**  
**3HT IRON PULLEYS, SHAFITING,**  
**SOLE MAKERS OF ADDYMAN'S**  
**T FRICTION PULLEY.**

FIG 8



**FAST & LOOSE PUL-**  
**LEYS DISPENSED WITH.**

**1 CLUTCH PULLEY**  
**ANSWERS FOR BOTH.**

**WHEN THE WEDGE**  
**IS WITHDRAWN, THE**  
**PULLEY RUNS LOOSE**  
**ON THE SHAFT.**

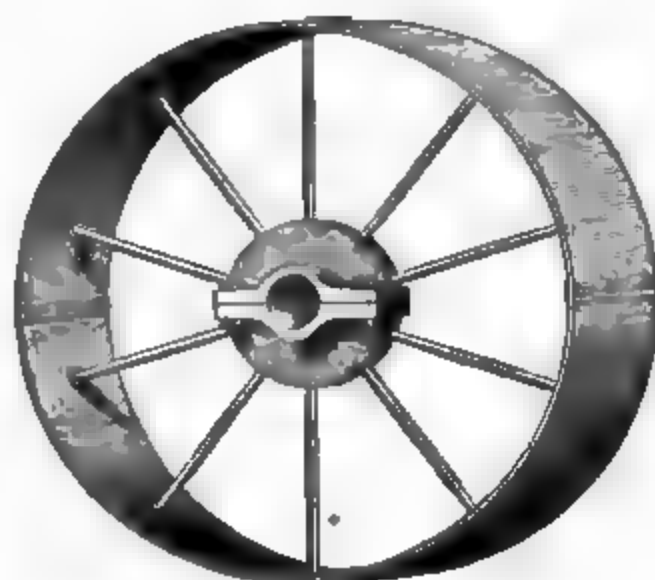


LOOSE PULLEY

**ROAD BELTS ARE EMPLOYED IT IS INVALU-**  
**THE SHAFT CAN BE STOPPED WITHOUT**  
**THE BELT.**

**Pulley Makers—continued.**

**Clark, T. & C. & Co.**, Wolverhampton.  
**Crossley, George**, Albion Machine Works, Cleeck-  
hoaton, Yorkshire.  
**Duncan Bros.**, 32, Queen Victoria-st., London,  
E.C. *See index to advertisers.*  
**Eades, W., Son & Co.** (Eade's Patent), West-  
minster Works, Montgomery-st., Sparkbrook,  
Birmingham.  
**Goodwin, Arnold**, 56, Sumner-st., London, S.E.  
Patent Convex wrought iron Pulleys.  
**Hall, J. & E.**, Dartford, Kent.  
**Harper & Co.**, Albion Iron Works, Aberdeen.  
**HUDSWELL, CLARKE & Co.**, Sole Makers  
of Rodgers' Patent Wrought-iron Pulleys.



The only all wrought-iron pulleys made.  
Over 37,000 in use. Railway Foundry, Leeds.

**Imperial Steam Pump and Engineering Company**  
Smethwick, Birmingham.

**Joseph, Henry**, Tho Manor-road Foundry, Leeds.

**Mackie, J. J. & Co.**, Berks Iron Works, Reading.

**Metcalf, T.**, Vulcan-st., Caledonian-st., Bradford.

**Orme, Fredk. & Co.**, 9, St. Andrew's-st., Hol-  
born-viaduct, London, E.C. *See index to*  
*advertisers.*

**Owens, S., & Co.**, 22, Whitefriars-st., Fleet-st.,  
London, E.C.

**Priest, Rowland**, Cradley-heath, near Brierley-  
hill, Birmingham.

**Proctor & Co.**, Stevenage, Hertfordshire.

**Reading Iron Works Company, Limited**,  
Reading, Berks.

**SELIG, SONNENTHAL & CO.**, 85, Queen  
Victoria-st., and Lambeth-hill, London, E.C.  
*See index to advertisers.*

**TANGYE BROS.**, 35, Queen Victoria-st., London,  
E.C.

**Thomas, John**, 94, Pritchett-st., Birmingham.

**Thompson, E.**, Rawdon, near Leeds.

**Welch, Francis B. & Co.**, Manchester-chambers,  
Manchester.

**Wilson, A., & Co.**, Vauxhall Iron Works,  
Wandsworth-road, S.W. *See index to adeer-*  
*tisers.*

**Pushes-Makers (Electric Bell).**

*F.—*

*G.—*

Baughan, W. H. & Co., Charlbury, Oxon. China, wood, ivory, brass *See index to advertisers.*

Franks, Robinson & Co., 76, Milton-st., Fore-st., London, E.C. Turners of electrical small work in vulcanite, ebonite, ivory, etc. *See index to advertisers.*

Gont, J. T. & Co, Faraday Works, King Richard's-road, Leicester. *See index to advertisers.*

Irvin and Sellors, Preston. Coil makers, ivory and wood turners. *See index to advertisers.*

Martin, A., 54, Percival-st., London, E.C. *See index to advertisers.*

Scott, Ronald A., 6, Pomona-place, Fulham, London, S.W.

TAYLOR, TUNNICLIFF & CO. (China), Eastwood, Hanley, London agent, Edwin Fox, 9, Bartlett's-buildings, Holborn-circus, London, E.C.

**Railway Signal Manufacturers.**

*F.—Signaux de Chemins de fer (Fab. de).*

*G.—Signale für Eisenbahnen.*

Blakey, Emmott & Co., Northern Telegraph Works, Halifax, and 66 and 68, Southampton-buildings, Chancery-lane, London, W.C.

Dorset, W., High-st., Epsom, Surrey.

Duncan Bros, 32, Queen Victoria-st., London, E.C.

Easterbrook, Hannaford & Co., 4, Queen Anne's-gate, London, S.W.

Electric Railway Signal Company, Stone Cross, Mansfield, Notts.

Fowler, J. & Co., India-buildings, Edinburgh.

Francis & Co (F. R. Francis, C.E., manager), Eagle Telegraph Works, Hatton-garden, E.C., and Lawford-road, London, N.W.

GARNHAM & CO., Sash-court, Wilson-st., London, E.C. *See index to advertisers.*

Gloucester Wagon Company, Limited, Gloucester.

Grieve & Gillespie, 81, Ormonde-st., Jarrow.

Hartley & Arnoux Bros., California Wks, Stoke-on-Trent.

Hick, Hargreaves & Co., Soho Iron Wks, Bolton.

Isea Foundry Company, 10, Bush-lane, Cannon-st., London, E.C.

King, J. Pinxton, Alfreton.

McKenzie & Holland, Vulcan Iron Wks, Worcester.

Messenger & Sons, 19, Broad-st., Birmingham.

Oliver & Arnol, 29, Leith-walk, Edinburgh.

Ransome's & Rapier, Watercote Iron Works, Ipswich.

Saxby & Farmer, Canterbury-road, Kilburn, London, N.W.

Stevens & Sons, 237-241, Southwark Bridge-road, London, S.E.

Stevens, J. J. & Sons, 47, New City-rl., Glasgow.

**Railway Signal Manufacturers.**

Sullivan, E. A., 20, Mawbey-road, Old road, London, S.E.

Sykes, Wm. Robert, 84, Kirkwood-road, head, S.E.

TYER & CO., Ashwin-st., Dalston, London, E.

Twoedy, J. & Co., Metcalfe-st., Carlisle.

**Reflector and Shade Manufacturers.**

*F.—*

*G.—*

BLEWIS, WILLIAM & SONS Establish 9 to 15, New Bartholomew-st., Birmingham. Dom Moltshanoff, Neghuny, Moscow, West Smithfield, London, E.C. Coal to the Cities of Moscow, Mexico, &c. Gas Companies.

BURMAN, R. H., 73, Lionel-st., Birmingham. MANUFACTURER OF PLATED BOLIC AND OTHER REFLECTORS.

Davies & Co., 34, Warwick-lane, New London, E.C.

Fox, T., 90, Hatton-garden, London, E.C.

HOUGHTON, GEO. & SONS, 89, Holborn, W.C.

TAYLOR, TUNNICLIFF & CO. (China) wood, Hanley. London agent, Edwin Fox, 9, Bartlett's-bldgs, Holborn-cir, London. Woodhouse & Rawson, 11, Queen Victoria-st., London, E.C. Stock kept and special made to order.

**Rolling Mills and Rolled Metals.**

*F.—Laminaires.*

*G.—Walzwerke.*

BOOTH, J. & CO, Sheepcote-st., Birmingham. Telephone, No. 311. *See index to advertisers.*

CLIFFORD, CHARLES & SON, rollers, Fazley-st., Birmingham.

Hall-street Metal Rolling Company, J. J. manager, Hall-st Works, Birmingham.

PHOSPHOR BRONZE COMPANY, 87, Sumner-st., Southwark-st., London. Wire and sheet mills, Bagot-st., Birmingham. Sole makers, under patents, of Phosphor Bronze and Silicon Bronze.

TAYLER, D. F. & CO, New Hall George-st -Parade, Birmingham.

**Schools of Telegraphy and Electrical Engineering.**

*F.—*

*G.—*

City & Guilds of London Institute, College, London, E.C.

City & Guilds of London Technical Tabernacle-row, London, E.C.

City of London College, J. C. F. C. White-st, Finsbury, London, E.C.



**s of Telegraphy and Electrical Engineering—continued.**

f Electric Light & Telephone Engineer-  
est Worthing.

f Science & Arts (Prof. A. Jamieson),  
w.

. Engineering College, West Worthing,  
t and non-resident pupils. Principal,  
ackthwaite.

l's Electrical Engineering College,  
on, Hugh Erat, B. Sc., F.C.S.), 2, Red  
l., London, W.C.

Andrew, C.E., F.R.S.E., &c., *principal*,  
of Science and Arts, Teacher of Elec-  
Engineering, 38, Bath-st., Glasgow.

9, Railway-approach, London-bridge,  
, S.E.

ollege School (Prof. W. G. Adams,  
electrician), 162, Strand, London, W.C.  
ollege, Manchester.

egraph Schools, Moorgate-st.-buildings,  
ph-st., London, E.C.

Telegraphy & Electrical Engineering,  
ices-st., Hanover-sq., London, W.

y College, Bristol.

y College (Prof. W. Garnett), Notting-

don Schools of Telegraphy & Electrical  
ring, 101, Uxbridge-rd., London, W.  
c to advertisers.

**Scientific Apparatus Makers.**

—*Appareils scientifiques (Fab. de).*

—*Wissenschaftliche Instrumente.*

Co., 12, White Hart-st., Catherine-  
don, W.C.

E. & Co., 34, Maiden-lane, Covent-  
London, W.C.

Emmott & Co., Northern Telegraph  
Halifax; and 55 and 56, Southampton-  
s, Chancery-lane, London, W.C. *See*  
*advertisers.*

., L., 147, Holborn, London, E.C.

& Co., Sash-court, Wilson-st., Fins-  
ondon, E.C. *See index to advertisers.*

N ELECTRIC WORKS, Narrow  
, Bristol.

. A., 44, Frith-st., Soho-sq., London, W.

LD, J. T., 41, QUEEN VICTORIA-  
NDON, E.C. MAKER AND IM-  
R OF EVERY DESCRIPTION OF  
IFIC APPARATUS FOR THE  
SES OF DEMONSTRATION AND  
RCH, ALSO MAKER OF SPECI-  
S IN ELECTRICAL APPARATUS,

CO., 65, Barbican, London, E.C.

& Sons, 86, Canonbury-rd., London, N.

**\* Screw, Stock, and Die Tap Makers.**

F.—

G.—

BLEWS, WILLIAM & SONS (Etab. 1782),  
9 to 15, New Bartholomew-st., Birmingham,  
Dom Moltshanoff, Negliuny, Moscow, and 38,  
West Smithfield, London, E.C. Contractors  
to the Cities of Moscow, Mexico, San Paulo,  
&c. Gas Companies.

CHURCHILL, CHARLES & CO., 21, Cross-  
st., Finsbury, London, E.C. (American).

Orme, Frederick & Co., 9, St. Andrew's-st.,  
Holborn-viaduct, London, E.C.

SELIG, SONNENTHAL & CO., 85, Queen-  
Victoria-st., and Lambeth-hill, London, E.C.

**Screw, Terminal, & Small Detached Accessories Manufacturers.**

F.—*Vis, Bornes, et Petits accessoires detachés.*

G.—*Schrauben und sonstige Artikel für Elektriker.*

ARMSTRONG, STEVENS & CO., 15, Whittall-  
st., Birmingham.

Baughan, W. H. & Co., Charlbury, Oxon.

Blakey, Emmott & Co., Northern Telegraph  
Works, Halifax; and 55 and 56, Southampton-  
buildings, Chancery-lane, London, W.C.

BLEWS, WILLIAM & SONS (Etab. 1782),  
9 to 15, New Bartholomew-st., Birmingham,  
Dom Moltshanoff, Negliuny, Moscow, and 38,  
West Smithfield, London, E.C. Contractors  
to the Cities of Moscow, Mexico, San Paulo,  
&c. Gas Companies.

DAVIS & TIMMINS, Bowling-green-lane,  
London, E.C. *See index to advertisers.*

LEVY, ARMAND, electrical sundriesman, 252,  
Goswell-rd., London, E.C., and 42, Rue de  
Ruysbrück, Brussels. All classes of screws,  
terminals, and couplings in stock. Sole agents  
for Barriere & Co., Paris. Screw cutting  
machines, brass and iron drawn rods, switches,  
etc., etc. *See index to advertisers.*

Lysaght, Jn., 28, Gracechurch-st., London, E.C.

MATTHEWS, W. H., 22, Charterhouse-sq.,  
London, E.C. Screws and small turned wares  
of all kinds. Screw Presses, Fly Presses, and  
Press Tools of all descriptions made and re-  
paired. Cutting and Stamping done for the  
trade.

MAYFIELD, J. T., 41, Queen Victoria-st.,  
London, E.C. Clamps, Binding Screws and  
Terminals of every description.

SELIG, SONNENTHAL & CO., 85, Queen  
Victoria-st., and Lambeth-hill, London, E.C.  
Stevens, F. A., 17, Duke-st., London, E.C. *See*  
*index to advertisers.*

Vulcan Manufacturing Company, Vulcan Works,  
Roccliffe-st., City Garden-row, London, N.  
*See index to advertisers.*

**Shackle Makers.**

*F.—Isolaurs électriques.*

*G.—Isolator-Fabriken.*

Ashworth, G. L., & Bros, Broad-st., Hanley, Stafford. *See index to advertisers.*

Crystal Porcelain Pottery Company, Limited, 23, St. Swithin's-lane, E.C. Works, Cobridge, Stoke-on-Trent. *See index to advertisers.*

MALING, C. T., Ford Pottery, Newcastle-on-Tyne. London sample rooms, 20, Bartlett's-buildings, Holborn-circus, E.C. *See index to advertisers.*

Pearson, James, Whittington Moor Potteries, near Chesterfield. London sample rooms, 20, Bartlett's-buildings, Holborn-circus, E.C.

Walker, Sidney F. & Oliver, 195, Severn-rd., Cardiff, and at Nottingham.

Woodhouse & Rawson, 11, Queen Victoria-st., London, E.C.

**Shafting Manufacturers**

*F.—Transmissions (Fab. de).*

*G.—Schaften-Fabriken.*

Askham Bros. & Wilson, Limited, Yorkshire Steel Works, Napier-st., Sheffield.

Curver, James Works, Nottingham. A. E. Ann, agent, 3, Broad-st.-bldgs., London, E.C.

Hind, H. & Son, 62, Blackfriars-road, London, S.E., and at Nottingham.

Kirkstall Forge Company, Leeds.

Orme, Frederick & Co, 9, St. Andrew's-st., Holborn-viaduct, London, E.C.

Owens, S & Co., 22, Whitefriars-st., Fleet-st., London, E.C.

Sagar, J. & Co., Bowling-green Iron Works, Halifax

SELIG, SONNENTHAL & CO, 85, Queen Victoria-st., and Lambeth-hill, London, E.C.

Snowball & Co, Crown Bridges Side, Newcastle-on-Tyne.

Taylor & Challen, 99, Constitution-hill, Birmingham.

TAYLOR, GEO. CROSLAND, Dee Side Electric Works, Neston, Cheshire. *See index to advertisers.*

Thompson, E, Rawdon, near Leeds

Victoria Engineering Company, Brewery-st., Stockport.

Yates, J & Co, Sheaf Wrks., Hunslet-rd, Leeds.

**Ships Telegraph Makers of.**

*F.—Télégraphes pour navires*

*G.—Schiffs-Telegraphen*

Apps, A., 433, Strand, London, W.C.

Duncan Bros., 32, Queen Victoria-st, London, E.C.

France & Morgan, 79 to 91, Warroch-st., Anderson, Glasgow

Hannan & Buchanan, 75, Robertson-st., Glasgow.

Henderson, Chas & Co., 9, York-buildings, York-st., Glasgow

Koerber, J. A., 44, Frith-street, Soho-square, London, W.

**\* Silk Spinners.**

*F.—*

*G.—*

Rickard, Wm, Ashbourne-rd Mills, Derbydon agent, Edwin Holloway, 2, Gutter-st., London, E.C.

**Societies Learned and Scientific**

*F.—Sociétés Savantes et Scientifiques*

*G.—Wissenschaftliche Vereine.*

Aeronautical Society of Great Britain, 1, Great Portico, Pall Mall, London, E.

British Association for the Advancement of Science, 22, Albemarle-st., London, W.

Chemical Society, Burlington-house, Piccadilly, London, W.

Civil & Mechanical Engineers' Society, 1, Minster-chambers, Victoria-st., London, W.

Institution of Civil Engineers, 2, Bedford-square, London, W.

INSTITUTION OF MECHANICAL ENGINEERS, 10, Victoria-chambers, Victoria-st., London, S.W.

Meteorological Society, 30, Great Garden-st., London, S.W.

Royal Microscopical Society, King's College, Strand, London, W.C.

Royal Society, Burlington-house, Piccadilly, London, W.

Society of Arts, 16, John-st., Adelphi, London, W.

Society of Telegraph Engineers and Electricians, 4, The Sanctuary, London, E.C.

**Solder Manufacturers and Merchants**

*F.—*

*G.—*

Osborne & Co., 11, Great Garden-st., chapel-rd., London, E. *See index to advertisers.*

Thickett, J., 47, 49 and 51, Charles-st., London, E.C.

**Speed Indicator Makers.**

*F.—Compteurs de Vitesse (Fab. de)*

*G.—Apparat zum Anzeigen der Geschwindigkeit*

Apps, A., 433, Strand, London, W.C.

Carlaw, David, 54 to 56, Ropework-lane, London, E.C.

Dempster, Moore & Co., 49, Robertson-st., Glasgow

Elliott Brothers, 101, St. Martin's-lane, Strand, London, W.C. (Base' Tachy)

Foster, E. & Son, Central Works, Wetherby, Halifax.

Groves, W., 69, Bolsover-st., Fitzroy-square, London, W.

Hannan & Buchanan, 75, Robertson-st., Glasgow (Sole makers of Richards' Improved)

Harding, T. H. & Son, Tower Works, London, E.C. Harding's Speed Indicator.

McNaught, W. & Son, 26, Robertson-st., Glasgow

OPPERMANN BROS., Brewery-st., London, E.C.

Orme Fredk. & Co, 9, St. Andrew's-st., Holborn-viaduct, London, E.C.

Schaffer & Holenberg, 202, Hope-st., Glasgow

SELIG, SONNENTHAL & CO., 85, Queen Victoria-st., and Lambeth-hill, London, E.C.

**Spelter Manufacturers.**

*F.—Zinc (Fab. de).*

*G.—Spiauter—Fabr.*

I, W., 60, Gracechurch-st., London,

Rothsay-st., Bermondsey New-road,  
S.E.

& Co., Limited, Gt. Clyde-st., Glasgow.

J. & Co., 9, Oswald-st., Glasgow.

T. B. & Co., 8, Picardy-place, Edin-

c Company, Swansea.

igh D. & Co., 110, Cannon-st., Lon-

Henry & Co., 23, Abchurch-lane,  
E.C.

Spelter Co., High-st. East, Sunderland.

Logers, Michell & Co., City-buildings,  
Hall-st., Liverpool.

t Son, The Spelter Works, Ruabon,  
Wales.

off, Louis, 79, Mark-la., London, E.C.

Spelter Company, Lower Greenhill, Stir-

Mortlock, 198, Upper Thames-st.,  
E.C.

Edmund Van der, 11, Queen Victoria-  
don, E.C.

& Co., Mary-hill, Glasgow.

Vale Spelter Company, Swansea.

IS SPELTER COMPANY, LIMITED,  
Swansea.

Sons, Margam & Hafod Wks., Swansea.

**Spring Makers for Pushes.**

ONG, STEVENS & CO., 15, Whit-  
Birmingham.

W. H. & Co., Chalbury, Oxon.

silver and plated brass.

F., 30, Noble-st., Goswell-road, Lon-  
C.

SON, 51 to 54, Charlotte-st., B'gham.

onald A., 6, Pomona-place, Fulham,  
S.W.

**Steam Packing Manufacturers.**

*India Rubber Steam Packing Manufacturers.*

*F.—Garnitures à vapeur (Fab. de).*

*F.—Liederungsdeckel-Fabrikanten.*

Vale Rubber Company, Palmerston-st.,  
s, Manchester.

, Abbott & Anderson, 9 & 10, High-st.,

Packing & Rubber Company, 77, Grace-  
-st., London, E.C.

in, 118, Southwark-st., London, S.E.  
*See index to advertisers.*

**Steam Packing Manufacturers—continued.**

BINNEY & SON, 62, Queen Victoria-st., E.C.,  
and Catherine-st., City-road, London, E.C.;  
22, Wellington-st., Leeds; 50, West Howard-  
st., Glasgow; and 63, Broad-st., Birmingham.

*See index to advertisers.*

Boardman Bros., Sharp-st. Mill, Rochdale-rd.,  
Manchester.

Clive & Co., Suffolk-grove, Southwark, London,

Davies, R. & Son, 17 & 19, Fleming-sq. B'kburn.

Demster, Moore & Co., 49, Robertson-st., Glasgow.

Foster & Williams, 87, Grange-road, Bermond-  
sey, S.E.

GEHRCKENS, C. K., 18, Jewry-st., London,  
E.C.

Golding, Bexfield & Co., 1, Lavers-road, Stoke  
Newington, N.

Hailwood, J. T., Ramsay-st., Rochdale.

Hall, Thomas Henry, 3, Gosta-green, Aston-st.,  
Birmingham.

Hellewell Rubber Company, 15-21, Corporation-  
st., Manchester.

Indestructible Packing Company, 9, Lea-place,  
East India Dock-road, London, E.

Ironmonger, Thomas & Co., 63, Bishopsgate-st.  
Within, London, E.C.

Irwell India Rubber & Gutta Percha Company,  
93, Mitchell-street, Glasgow.

Liverpool Rubber Company, 292, Vauxhall-road,  
Liverpool.

McDowell, Robt. Wm. Henry, 13, Bow-lane,  
London, E.C.

Macintosh, C. & Co., Cambridge-st., Manchester.

Mead, Fredk. M. & Co., 323n, Kennington-road,  
London, S.E.

Miles, John & Co., Albert Works, Bolton,  
Lancashire.

Morgan & Son, 217, Blackfriars-road, S.E.;  
warehouse, 13, Charles-st., London, S.E.

Platt, W. H. & Co., Stamford-st., Ashton-under-  
Lyne.

Sheath Bros., 89, City-road, London, E.C. *See*  
*index to advertisers.*

Statham, H. & Co., 9, 10 & 11, Corporation-st.,  
Manchester.

Terrell, Wm. & Sons, Limited, Welsh-back and  
Canon's-marsh, Bristol.

Turner, T. B. & Co., Scotia Mills, Gerard-st.,  
Derby.

Warner & Koenig, 23, Addle-st., London, E.C.

WILCOX, W. H. & CO., 36, Southwark-st.,  
London, S.E.

Wotherspoon, J. & Sons, 97, Wellington-st.,  
Glasgow.

**Stranding Machine Manufacturers.**

*F.—Machines à câbler le fil (Fab. de).*

*G.—Drahtlitzenmaschinen—Fabr.*

BARRACLOUGH, T., & CO., LIMITED,  
offices, 8, King-st.; works, Whiteley-st.,  
Rochdale-rd., Manchester. *See index to ad-*  
*vertisers.*

MOFFATT, ALEXANDER & CO., 26, College-  
st., Dowgate-hill, London, E.C.



**Stranding Machine Manufra.—continued.**

**NORTH BRITISH RUBBER COMPANY, LIMITED.** Warehouses: 57, Moorgate-st., London, E.C., 6, Charlotte-st., Mosley-st., Manchester; & 13 & 15, Oswald-st., Glasgow; works, Castle Mills, Edinburgh.



**Sulphate of Alumina Manufacturers.**

*F. Sulfate d'Alumine.*

*G. Schwefelsäure Thonerde.*

Pochin, Henry, Davis & Co., Wellington-quay, Newcastle

**Sulphate of Ammonia Manufacturers.**

*F. Sulfate d'Ammoniaque (Fab. de).*

*G. Schwefelsäure Ammonium.*

Burt, Boulton & Haywood, 64, Cannon-st., London, E.C.

Dickinson, Arthur J., Surrey Canal, Deptford, London, S.E.

Lanark Oil Co., Ltd., 58, George-st., Edinburgh.

Lockyer, J. & Son, 36, Mark-lane, London, E.C.

Sadler, Saml., A., 85, Gracechurch-st., London, E.C.

Torr, George, Trundley's-lane, Lower-road, Deptford, London, S.E.

**Sulphate of Copper Manufacturers.**

*F. Sulfate de Cuivre (Fab. de).*

*G. Kupferstuf.*

Christopherson, Clifford & Co (agents), 17, Great Tower-st., London, E.C.

Macclesfield Patent Sulphate of Copper Company (Saml. Orme, manager, The Moss, Macclesfield.

Orr, J. B., 46, Cannon-st., London, E.C.

**\* Sulphur Manufacturers and Refiners.**

*F. Soufre (Raffineurs de).*

*G. Schwefel-Lauterer.*

Scott & Co., Marsh-gate-lane, Stratford, London, E.

**Sulphuric Acid Manufacturers.**

*F. Acide sulfurique (Fab. d').*

*G. Schwefelsäure.*

Beckles, S. H., & Co., 6, Lime-st.-square, London, E.C.

Hills, Frank C., & Co., 17, Philpot-lane, London, E.C.

London Chemical Company, Bow Bridge-wharf, London, E.

Miller & Johnson, 36, Mark-lane, London, E.C.

Scott & Co., Marsh-gate-lane, Stratford, London, E.

**Sulphurous Acid Manufacturers.**

*F. Acide Sulfureux (Fab. d').*

*G. Schwefelige Säure.*

Bell, Thomas, & Co., Vitriol Works, London, E.

Houlder, Wm., Son & Co., 9, Minch, London, E.C.

Scott & Co., Marsh-gate-lane, Stratford, London, E.

**Switch Board Manufacturers.**

*F.—*

*G.—*

Blakey, Emmott & Co., Northern Works, Halifax, and 55 and 56, South buildings, Chancery-lane, London, W.

Koorber, J. A., 44, Frith-st., London, W.

WEEDON & IRISH, 30, Borough-road, derland.

Whalley, A., 71, Fleming-square, Black

**\* Tallow Merchants.**

*F. Suif (Marchands de).*

*G. Talg-Handler.*

MORGAN & SON, 217, Blackfriars-road, S.E., warehouse, 15, Charles-st., S.E. See index to advertisers.

ROSE, SIR W. A., & CO., 66, Upper T st., London, E.C. Refiners of pure tallow.

**Taping Machine Manufacturers.**

*F. Machines à envelopper le fil par des (Fab. de)*

*G. Bandüberziehmaschinen für Draht*

BARRACLOUGH, T. & CO., Ltd. offices, 8, King-st., Manchester; Whiteley-st., Rochdale, Manchester. See index to advertisers.

Orme, Fredk., & Co., 9, St. Andrew Holborn-viaduct, London, E.C.

**Teachers of Telegraphy and Electrical Engineering.**

*(See schools.)*

**Telegraph Agents.**

*F. Agents télégraphiques.*

*G. Telegramm-Agenten.*

Francis, F. R., C.E., Eagle Telegraph Hatton-garden, London, E.C., & Oxford Lawford-rl., N.W.

Powell, Hector Thomas, 9, Fenchurch London, E.C.

McLean's Telegraphic News Exchange Throgmorton-st., London, E.C.

Stuart R. American, 11, Manchester-liverpool

Watson Anglo-Indian & General Agency, 27, Leadenhall-st., London, E.



**raph Cable Making Machine  
Manufacturers.**

*nes à fabriquer le Câble télégraphique.  
chinen für Telegraphen-Kabel—Fabr.*

LOUGH, T. & CO., LIM. Offices,  
-st., Manchester; works, Whiteley-st.,  
-rd., Manchester. See index to ad-

. P. & Co., Yiewaly-wharf, West  
East Surrey Foundry, Pitlake, Croydon,  
ros., 32, Queen Victoria-st., London,

Phillips, 14, Union-st., Old Broad-st.,  
d Victoria Works, Charlton, London,  
\* index to advertisers.

lexander & Co., 26, College-st., Dow-  
, London, E.C. See index to advertisers.  
tephens, James Works, Queen's-road,  
a, S.W.

undry Co., Lim., Newton-le-Willows.  
h & Bulmer, Back-lane, Gallowgate,  
le-on-Tyne.

**Telegraph Code Ciphers.**

*F.—Chiffres pour Télégraphie.*

*Chiffren-Codex für Telegraphisten.*

avid & Son, 129, Buchanan-st.,

& Brinkerhoff, American agents for  
Universal Electrical Directory, and  
and Garsin's Telegraphic Cipher Code  
19, East 18th-st., New York, U.S.A.  
to advertisers.

E., c/o Wm. Dawson & Sons, 121,  
st., London, E.C.

Adams & Co., 32, Paternoster-row,  
E.C.

R., 14B, Exchange-bldgs., Liverpool.  
Howe, Princess-st., Manchester.

11, Manchester-buildings, Liverpool.

AWS, D., 79½, Gracechurch-st.,  
E.C.

**Telegraph Companies.**

*—Télégraphes (Compagnies de).*

*chaften zur Beförderung von Telegramme.*

Telegraph & Cable Company, Lim.,  
ange-buildings, Liverpool.

erican, Limited. General Office, 26,  
id-st., London, E.C.

Submarine, Limited, 8, Great Win-  
st., London, E.C.

Franaise de Télégraphe de Paris à  
rk, 100 & 101, Gresham-house, London,  
ad 24, Royal Exch., Old Broad-st.,  
E.C.

**Telegraph Companies—continued.**

Cuba Submarine, Lim., 61, Old Broad-st., London,  
E.C.

Direct Spanish, Lim., Leadenhall-buildings,  
Leadenhall-st., London, E.C.

Direct United States Cable Co., Lim. General  
offices, 52, Old Broad-st., London, E.C.

Eastern Extension Australasia & China, Lim.,  
66, Old Broad-st., London, E.C.

Eastern & South African Telegraph Co., 66, Old  
Broad-st., London, E.C.

Eastern Telegraph Co., 66, Old Broad-st., London,  
E.C. Geo. Draper, Secretary.

Electric News Telegraph Company, Limited.  
Chief office, 4, Ludgate-circus, London, E.C.,  
and at Stock Exchange, 4, Warnford-court,  
London, E.C.

Exchange, Lim., Bartholomew-house, Batholo-  
mew-lane, London, E.C.

German Union Telegraph & Trust Co., Lim.,  
66, Old Broad-st., London, E.C.

Globe Telegraph & Trust Co., Lim., 66, Old  
Broad-st., London, E.C.

Government Indo-European Telegraph, 49 & 50,  
Parliament-st., London, W.

GREAT NORTHERN TELEGRAPH CO. OF  
COPENHAGEN. Hermann Gustave Erichsen,  
representative; Frederick Carl Christian  
Nielsen, manager. 119, Bishopsgate-st.  
Within, London, E.C.

Indo-European, Lim., 18, Old Broad-st., London,  
E.C., and 9, East India-avenue, London, E.C.

Jersey & Guernsey Co., Limited, 26, Budge-row,  
Cannon-st., London, E.C.

London Platino-Brazilian, Lim., 66, Old Broad-  
st., London, E.C.

Mediterranean Extension, Limited (E. Tombs,  
secretary), 158, Gresham-house, Old Broad-  
st., London, E.C.

Montevidean & Brazilian Co., Lim., 9, King's  
Arms-yard, Coleman-st., London, E.C.

North Atlantic Cable Co., Limited, 109, Fen-  
church-st., London, E.C.

Postal Telegraph Stores, Gloucester-rd., Regent's-  
park, London, N.W.

Reuter's Telegram Co., Limited, 24, Old Jewry,  
London, E.C.

Spanish National Submarine Telegraph Company,  
Limited, 6, Old Jewry, London, E.C.

Submarine Cable Trust, 66, Old Broad-st.,  
London, E.C.

Submarine Telegraph Co., 2, Throgmorton-av.,  
London, E.C.

WEST COAST OF AMERICA, LIM., 98,  
CANNON-ST., LONDON, E.C.

West India & Panama, Lim., Dashwood-house,  
9, New Broad-st., London, E.C.

Western & Brazilian, Lim, 19, Gt. Winchester-  
st., London, E.C.

Western Union Telegraph Co., Lessees of The  
American Telegraph & Cable Co., 211 & 214,  
Gresham-house, Old Broad-st., London, E.C.,  
and 21, Royal Exchange, London, E.C.

**Telegraph Engineers of Railway Companies (Official).**

*F.—Télégraphes (Ingénieurs de chemins de fer).*

*G.—Telegraphenbau—Eisenbahn-Ingenieure.*

- Clements, A. F., North British, Edinburgh.  
 Dunn, A. S., telegraph department, Caledonian Railway Co., Glasgow, N. B.  
 Fletcher, John Wm., London & North-Western, General Offices, Euston Station, Euston-grove, London, N. W.  
 Gilbert, E., Dundee & Arbroath Joint Railway Co., Commercial-st., Dundee.  
 Graves, A., North-Eastern—City Office: Great Eastern Station, Liverpool-st., London, E. C.  
 Houghton, London, Brighton & South Coast Offices, London Bridge Station, S. E.  
 Langdon, W. C., telegraph department, Midland Railway, Derby.  
 Leonard, William, Superintendent South Eastern Railway Company, Tunbridge, Kent.  
 Neale, J., North Staffordshire Railway, Stoke-on-Trent.  
 Sach, H., Great Eastern. Head Offices: Liverpool-st., London, E. C.

**Telegraph Instrument Manufacturers.**

*F.—Instrumentenfabrikanten (Fab. de).*

*G.—Telegraphische Instrumente—Fabr.*

- Apps, A., 433, Strand, London, W. C.  
 Bailey, W. H. & Co., Essex-st., Salford, Manchester.  
 Bassano & Slater, Traffic-st., Derby. *See index to advertisers.*  
 Beach, George, 14, Norfolk-rd., Dalston-la., London, N. *See index to advertisers.*  
 Blakey, Emmott & Co., Northern Telegraph Works, Halifax, and 55 and 56, Southampton-buildings, Chancery-lane, London, W. C.  
 CHADBURN & SON, Telegraph Works, Waterloo-rd., Liverpool.  
 CLARK, J., MUIRHEAD & CO., 23 Regency-st., London, S. W.  
 Driver, George, 27, Warren-st., Euston-rd., London, N. W.  
 Elliott Bros., 449, Strand, London, W. C., and 101, St. Martin's-la., London, W. C.  
 Francis & Co. F. R. Francis, C. E., Manager, Eagle Telegraph Works, Hatten-garden, London, E. C., & Lawford-rd., London, N. W.  
 Garnham & Co., Sash-st., Wilson-st., London, E. C. *See index to advertisers.*  
 Griffith & Co., 4, Queen Anne's-gate, London, S. W. Works, Reading.  
 GROVES, W., 89, Bolsover-st., Fitzroy-sq., London, W.  
 Haines, Montpelier-st., Cheltenham.  
 Harman & Buchanan, 75, Robertson-st., Glasgow.  
 Henley & W. T., Telegraph Works Co., Lim., 8, Drapers'-gardens, London, E. C. *See index to advertisers.*  
 Hornsey, Wm., 17, Bernard-st., Southampton.  
 Johnson & Phillips, 14, Union-court, Old Broad-st., London, E. C., and Victoria Works, Charlton, S. E.

**Telegraph Instrument Manufacture.**

- Koerber, J. A., 44, Frith-st. S. E. W.  
 Lainchbury, A. G., 65, East-rd., London, N.  
 Mason Bros. & Co., 17, Hope-st., Glasgow.  
 Miller, Richard, 54, St. Paoch-st., Glasgow.  
 PATERSON & COOPER, 76, Little London, E. C. *See index to advertisers.*  
 Phillips, E., 63, Wilson-st., Derby.  
 Reid Bros., 12, Wharf-rd., City-rd., London, E. C.  
 Sax, Julius, 108, 110, Russell-st., Bedford and Bedford Telegraph Works, Bedford-sq., London, W. C.  
 Scottish Telegraph Construction & Maintenance Co., North Area, Royal Exchange, Glasgow.  
 Siemens Bros. & Co., Limited, 12, Queen's-gate, London, S. W.  
 Simmons, C. J., 56, Levertton-st., London, E. C. *See index to advertisers.*  
 STIFF, JAMES, & SONS, High-st., London, S. E.  
 Telegraph Improvement Company, Ltd., Austin-frars, London, E. C.  
 Theiler, M., & Sons, 86, Cannon-rd., London, N.  
 Tyler & Co., Ashwin-st., Dalston-lane, London, E.  
 Volk, Magnus, 25, Ditchling-rd., Brighton.  
 Warden, W. M., & Co., 27, Gt. Ouse-st., London, S. W.  
 Whalley, A., 71, Fleming-square, Blackpool.  
 White, James, 241, New-hall-st., Glasgow.  
 Whitley Partners, Limited, Hunslet-rd., Leeds.

**Telegraph Iron & Steel Buoys.**

*F.—Boies.*

*G.—Bojen für telegraphische Zwecke.*

- Duckitt & Berry, Brunswick Graving Dock, Liverpool.  
 JOHNSON & PHILLIPS, 14, Union-st., Old Broad-st., London, E. C., and Works, Charlton, London, S. E.  
 Jukes, Coulson, Stokes & Co., 13, Cannon-lane, London, E. C.  
 Siemens Bros. & Co., Limited, 12, Queen's-gate, London, S. W.

**Telegraph Paper Makers.**

*F.—Papier télégraphique (Fab. de).*

*G.—Papierfabriken für Telegraphen.*

- Milchbeck, C. & Co., 2, Coleman-st., London, E. C.  
 SABELL, MAX, 2, Coleman-st.-buildings, London, E. C.  
 Spallings & Hodge, 40 and 41, Hatten-garden, London, E. C.  
 Waterlow & Sons, Limited, 95, London, E. C.  
 Zuber, Roder & Co., 3, Bridge-row, London, E. C.

### Telegraph Stores.

*F.—Appareils télégraphiques.*

*F.—Telegraphische apparate.*

aw, 10a, Victoria-buildings, Victoria-  
hester.

& Son, All Saints' Works, Derby.

VIN & CO., LIMITED, offices, 5,  
inchester-st., London, E.C., works,  
London, E.

Co., Sash-ct., Wilson-st., Finsbury,  
E.C. *See index to advertisers.*

I & CO., 4, Queen Anne's-gate,  
S.W., works, Reading. *See index to*  
*r.*

S, W. T., TELEGRAPH WORKS  
VY, LIMITED, offices, 8, Drapers'-  
London, E.C. *See index to advertisers.*  
later, 28, Hamilton-st., Birkenhead.  
lelsby.

dney F. & Oliver, 195, Severn-rd.,  
nd at Nottingham.

lectric Company, 59, Moorgate-st.,  
E.C.

### raph and Telephone Cable

#### Manufacturers.

*(See cable manufacturers.)*

### h & Telephone Instrument Case Manufacturers.

*es pour Instruments télégraphiques.*

*ten für telegraphische Instrumente.*

J. H., & Co., Charlbury, Oxon. *See*  
*lvertisers.*

smott & Co., Northern Telegraph  
alifax; and 55 and 56, Southampton-  
Chancery-lane, London, W.C. *See*  
*lvertisers.*

ohn Fk., 39, Lever-st., London, E.C.  
F, WILLIAM M., 36, Percival-st.  
E.C. Lock and Block single needle  
der perforated photometer and tele-  
æ. By appointment to Her Majesty's  
nt and the principal Railway and  
Companies. The cheapest house in  
for the manufacture of Telegraphic  
ork by hand and machinery. Prize  
ris 1881, the only medal awarded for  
c cabinet work. *See index to adver-*

Co., Sash-ct., Wilson-st, Finsbury,  
E.C. *See index to advertisers.*

. & Co., Faraday Works, King  
road, Leicester. *See index to adver-*

INDIA-RUBBER COMB COM-  
18, London-wall, London, E.C. *See*  
*lvertisers.*

138, London-wall, London, E.C.

REDERICK & CO., 11, Clerkenwell-  
don, E.C. *See index to advertisers.*

### Telegraph & Telephone Pole Manufacturers (Iron).

*F.—Poteaux télégraphiques en fer.*

*G.—Eisene Telegraphen-Strangen.*

ARMSTRONG, STEVENS & CO., 15, Whittall-  
st., Birmingham.

Atlas Iron Works Company, Litchurch, Derby.

Badger, John & Co., Stephenson-st., Stephenson-  
place, Birmingham.

BLEWS, WM., & SONS (Etabd. 1782), 9 to  
15, New Bartholomew-st., Birmingham; Dom  
Moltshanoff, Negliuny, Moscow, and 38, West  
Smithfield, London, E.C. Contractors to the  
cities of Moscow, Mexico, San Paulo, &c. Gas  
companies.

Brotherton, J. & Co., Monmore-green, Wolver-  
hampton.

Broughton, W. H. & Co., Alpha Works, Smeth-  
wick, Birmingham.

CLARK, L., MUIRHEAD & Co., 23, Regency-  
st., London, S.W.

Forth Bank Foundry Company, Bo'ness, Linlith-  
gowshire.

Fuller, John C. & Son, 547, Old Ford-road, Bow,  
London, E., and 47, Finsbury-pavement,  
London, E.C.

Hardy & Padmore, Blockhouse, Worcester.

Johnson & Phillips, 14, Union-court, Old Broad-  
street, London, E.C., and Victoria Works,  
Charlton, London, S.E. *See index to advertisers.*

Morton, F., & Co., Naylor-st., Liverpool.

NORMAN & SON, 217 to 223, Argyle-street,  
Glasgow, and at Barrow-in-Furness.

Reid Bros., 12, Wharf-road, City-road, London,  
N.

Russell, J. & Sons, Limited, Crown Tube Works,  
Wednesbury.

Spencer, James E. & Samuel, 3, Queen-street-  
place, London, E.C.

Stewart, A. & J., Limited, 41, Oswald-st., Glas-  
gow.

Taunton, R. H., & Hayward, Heneage-st.,  
Birmingham.

Warden, J. & Sons, 13, Broad-st., Birmingham.

Whitehouse & Co., Globe Tube Works, Wednes-  
bury.

Woodhouse & Rawson, 11, Queen Victoria-st.,  
London, E.C.

### Telegraph & Telephone Wire Coverers.

*(See wire coverers.)*

### Telegraph Works.

*F.—Usines télégraphiques.*

*G.—Telegraphen-Fabriken.*

Ash, J., & Sons, Rea-st. South, Birmingham.

Bassano & Slater, Traffic-st., Derby. *See inde*  
*to advertisers.*

Callender's Bitumen Telegraph & Waterproof  
Co., 101, Leadenhall-st., London, E.C.

CLARK, L., MUIRHEAD & CO., 23, Regency-  
st., London, S.W.

**Telegraph Works—continued.**

Davis, John & Son, All Saints' Works, Derby.  
 Felten & Guillaume (W. F. Dennis & Co., agents), 101, Leadenhall-st., London, E.C.  
 Francis & Co. (F. R. Francis, C.E., Manager), Eagle Telegraph Works, Hatton-garden, London, E.C., and Lawford-road, London, N.W.  
**HENLEY'S, W. T., TELEGRAPH WORKS COMPANY, LIMITED**, offices, 8, Drapers'-gardens, London, E.C.  
 Hooper's Telegraph and India Rubber Works, 31, Lombard-st., London, E.C.  
 Johnson & Phillips, 14, Union-court, Old Broad-st., London, E.C., & Victoria Works, Charlton-st., S.E.  
**JOHNSON, R., & NEPHEW**, 8, Great Winchester-st., London, E.C.  
 Lewis, J. Slater, 28, Hamilton-st., Birkenhead. Telegraph Insulator Works, Helsby.  
**PATERSON & COOPER**, 76, Little Britain, London, E.C. *See index to advertisers.*  
**REID BROS**, 12, Wharf-rd., City-rd., London, N. *See index to advertisers.*  
 Sax, Julius, 108, Great Russell-st., Bloomsbury, and Bedford Telegraph Works, Store-st., Bedford-sq., London, W.C.  
 Siemens Bros. & Co., Limited, 12, Queen Anne's gate, London, S.W.  
**TAYLOR, GEO. CROSLAND**, Dee Side Electric Works, Neston, Cheshire. *See index to advertisers.*  
 Telegraph Construction and Maintenance Co., Limited, 38, Old Broad-st., London, E.C.  
 Theiler, M. & Sons, 86, Canonbury-rd., London, N.  
 Tyer & Co., Ashwin-st., Dalson-junction, London, E.

**Telephone Apparatus Makers.**

*F.—Appareils téléphoniques (Fab. d').*

*G.—Telephon-Apparate (Fab.).*

Apps, A., 433, Strand, London, W.C.  
 Bassano & Slater, Traffic-st., Derby. *See index to advertisers.*  
 Blakey, Emmott & Co., Northern Telegraph Works, Halifax; and 55 and 56, Southampton-buildings, Chancery-lane, London, W.C. *See index to advertisers.*  
**Britannia Rubber & Kamptulicon Co.**, 32, Cannon-st., London, E.C.  
**CUTTING, R. C., & CO.**, Wardrobe-chambers-Queen Victoria-st., London, E.C.  
 Dale, H. & E. J., 4, Little Britain, E.C., and 26, Ludgate-hill, London, E.C. *See index to advertisers.*  
 Davis, Langdon & Co., 110, Cannon-st., London, E.C.  
 Elliott Brothers, 101, St. Martin's-lane, and 449, Strand, London, W.C.  
 Francis & Co. (F. R. Francis, C.E., Manager), Eagle Telegraph Works, Hatton-garden, London, E.C., and Lawford-road, London, N.W.

**Telephone Apparatus Makers—continued.**

Gent, J. T. & Co., Faraday Works Richard's-rd., Leicester. *See index to advertisers.*  
**HARBURG INDIA RUBBER COMPANY**, 138, London-wall, London, E.  
 Harrison, Cox-Walker & Co., 4, High Darlington.  
**LEVY, ARMAND**, electrical sundries, Goswell-rd., London, E.C., and 42, Ruybroeck, Brussels. Vulcanite rod tube cases, permanent magnets, carbon screws, &c. *See index to advertisers.*  
 Nelson, James, & Sons, 47, Briggate, Le Northern District Telephone Company, 1 Sunderland. Switch-boards for commercial subscribers to an Exchange.  
**PATERSON & COOPER**, 76, Little London, E.C. *See index to advertisers.*  
**SAX, JULIUS**, 108, Gt. Russell-st., London, E.C., and Bedford Telegraph Works, Bedford-sq., W.C.  
 Single Wire Multiple Telephone Signal Company Limited, 11, Old Broad-st., London, E.C.  
 Spence, J. Berger & Co., 31, Lombard-st., London, E.C. *See index to advertisers.*  
 Strangeway, H. B. T., 2, Cambridge-gardens, Twickenham.  
 Theiler, M. & Sons, 86, Canonbury-rd., London, N.  
 Vulcan Manufacturing Company, Vulcan Rockliffe-st., City-garden-row, London  
 Walker, Sidney F. & Oliver, 195, Sea Cardiff, and at Nottingham.  
**WEEDON & IRISH**, 30, Borough-rd., London, E.  
 Western Electric Company, 59, Moor London, E.C.  
**WHALLEY A.**, 71, Fleming-sq., Black Winter F., 138, London-wall, London, E.

**Telephone Companies.**

*F.—Compagnies de Téléphones.*

*G.—Telephon-Compagnien.*

American West Coast, Limited, 4, New st., London, E.C.  
 Anglo-Continental, Limited, Windsor-cl Great St. Helen's, London, E.C.  
 China & Japan Telephone Co., Limited, Winchester-st., London, E.C.  
 Consolidated Telephone Construction and Maintenance Company, Limited, 109, Farringham-rd., London, E.C.  
 Crossley Telephone Co., 18, Austin London, E.C.; Albany-buildings, B Yorks.  
 Edison-Gower Bell Telephone Co. of Limited, 34, Wallbrook, London, E.C.  
 European Telephone Co., Limited, 6, L st., and 34, Wallbrook, London, E.C.  
 Gower Bell Telephone Company, Limited Farringham-rd., London, E.C.



**Telephone Companies—continued.**

**& Cheshire Telephonic Exchange Co.,**  
38, Faulkner-st., Manchester.  
**and Globe Telephone and Maintenance**  
**Co., Limited, 31, Queen Victoria-st., Lon-**  
**don, E.C.**  
**Telephone Co., Limited, 11, Queen**  
**-st., London, E.C.**  
**Telephone Co., Limited, Wellington-**  
**-st., 40, Bennett's-hill, Birmingham.**  
**Telephone Co., Limited, 3, Great Win-**  
**-st., London, E.C.**  
**Telephone and Electric Light Co.,**  
**34, Walbrook, London, E.C.**  
**Telephone Company, Limited, 20,**  
**bury, London, E.C.**  
**England Telephone Co., Limited, 98,**  
**st., London, E.C.**  
**Time & Telephone Co., 41, Cornhill, &**  
**Queen Victoria-st., London, E.C.**  
**Company of Austria, Limited, 34,**  
**St. Mark, London, E.C.**  
**Company of Egypt, 3, Gt. Winchester-**  
**-ton, E.C.**  
**Company of Ireland, Limited (W. J.**  
**Wynn), Commercial-buildings, Dublin.**  
**Telephone Co., Ltd., 36, Coleman-st.,**  
**E.C.**

**Telephone Instrument Makers.**

*Instruments téléphoniques (Fab. de).*

*G.—Telephon-Fabriken.*

33, Strand, London, W.C.  
**Berger & Co., 31, Lombard-street,**  
**E.C.**  
**... & Sons, 86, Canonbury-road,**  
**N.**  
**... 16, Burton-st., Nottingham.**  
**Irish, 30, Borough-road, Sunderland.**  
**Electric Company, 59, Moorgate-street,**  
**E.C.**

**Winding Machines for Wire, &c.**

*—Machines à essayer les fils.*

*Probirmaschinen für Draht etc..*

**Clyde & Co., 84 & 85, Upper White-**  
**London, E.C.**

**Lead Foil Manufacturers.**

*—Feuilles d'étain (Fab. de).*

*—Zinn- und Bleiblätter—Fabr.*

**... Wharf-road, City-road, London, N.**  
**... 28, Barbican, London, E.C.**  
**... & Co., 238, Blackfriars-road,**  
**E.C.**

**Tin & Lead Foil Manufacturers.—continued.**

**Compton, Henry, & Co., 148, Fenchurch-st.,**  
**London, E.C.**  
**Grosvenor, Henry, 1, Bridgewater-square, Bar-**  
**bican, London, E.C.**  
**Quirk, Barton & Co., 61, Gracechurch-st., Lon-**  
**don, E.C. Specially prepared for Electrical**  
**purposes. See index to advertisers.**  
**Robertson, Betts & Co., Elthorne-road, Upper**  
**Holloway, London, N.**  
**SABEL, MAX, 2, Coleman-st.-bldgs., London,**  
**E.C. Tin and Lead Foil specially prepared**  
**for accumulators, &c.**  
**Schreiber, Frederick William, 5, Bond-court,**  
**Walbrook, London, E.C.**

**Torpedo Manufacturers.**

*F.—Torpillen (Fab. de).*

*G.—Torpedo-Fabriken.*

**McEvoy, Captain C. A., 18, Adam-st., Adelphi,**  
**London, W.C.**

**\* Trade Protection Societies.**

*F.—*

*G.—*

**Blackham & Company, 29 & 30, Exchange-bldgs.,**  
**Stephenson-place, Birmingham. For recovery**  
**of debts, enquiries, and issuing weekly and**  
**monthly gazettes.**

**\* Tube Brush Makers.**

*F.—*

*G.—Bürsten zum Reinigen der Röhren.*

**Anderson, John C., 155, Fenchurch-st., E.C.**  
**Boilers Tube Brushes, every description.**  
**Dempster, Moore & Co., 49, Robertson-street,**  
**Glasgow.**  
**Orme, Fredk. & Co., 9, St. Andrew's-st., Holborn-**  
**viaduct, London, E.C.**  
**ROWAT, ALEXANDER & CO., 25, Candle-**  
**riggs, Glasgow. (Boiler tubes).**  
**SELIG, SONNENTHAL & CO. (American, &c.)**  
**85, Queen Victoria-st., and Lambeth-hill,**  
**London, E.C.**

**\* Tube Expanders.**

*F.—*

*G.—Röhren-Auftreiber.*

**Dudgeon, Richard, 114, Fenchurch-st., London,**  
**E.C. See index to advertisers.**  
**Orme, Fredk. & Co., 9, St. Andrew's-st., Holborn-**  
**viaduct, London, E.C.**  
**SELIG, SONNENTHAL & CO. (Sonnenthal's**  
**Patent), 85, Queen Victoria-st., and Lambeth-**  
**hill, London, E.C. See index to advertisers.**

**Tube Makers—Brass.**

*F.—Tubes—Laiton.*

*G.—Röhren—Messing.*

Anderson, John C., 155, Fenchurch-st., London, E.C.

Birmingham Battery & Metal Company, 21, Gresham-house, Old Broad-st., London, E.C.

Birmingham Patent Iron & Brass Tube Co., Smethwick, Birmingham.

BLEWS, WILLIAM & SONS (Established 1782), 9 to 15, New Bartholomew-street, Birmingham; Dom Moltshanoff, Negliuny, Moscow; and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies.

Bolton, T. & Sons, Broad-st. Metal Works, Birmingham, & Oakamoor, Cheadle, Staffordshire.

BOOTH, J. & CO., Sheepcote-st., Birmingham. Telephone No. 311. *See index to advertisers.*

Exton, & Co., Hercules Works, Chippenham, Wilts.

Pane, Jas. & Son, Denmark-st., Birmingham.

Smith, John & Sons, 18, 23 & 24, St. John's-sq., London, E.C.

Wilkes, J., Mapplebeck & Co., 9, New Broad-st., London, E.C.

**Tube Makers—Copper.**

*F.—Tubes—Cuivre.*

*G.—Röhren—Kupfer.*

BLEWS, WILLIAM & SONS (Established 1782), 9 to 15, New Bartholomew-street, Birmingham; Dom Moltshanoff, Negliuny, Moscow; and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies.

BOLTON, T. & SONS, Broad-st. Metal Works, Birmingham, and Oakamoor, Cheadle, Staffordshire.

Booth, J. & Co., Sheepcote-st., Birmingham.

Exton & Co., Hercules Works, Chippenham, Wilts.

Smith, John & Sons, 18, 23 & 24, St. John's-sq., London, E.C.

**Tube Makers—Iron.**

*F.—Tubes—Fer.*

*G.—Röhren—Eisen.*

Anderson, John C., 155, Fenchurch-st., London, E.C.

BLEWS, WILLIAM & SONS (Established 1782), 9 to 15, New Bartholomew-street, Birmingham; 38, West Smithfield, London, E.C.; and Dom Moltshanoff, Negliuny, Moscow. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies.

BOOTH, J. & CO., Sheepcote-st., Birmingham. Telephone No. 311. *See index to advertisers.*

**Tube Makers—Iron—continued.**

DAVIS, F., Palace-chambers, 9, 1 London, S.W.

Imperial Tube Co., Birmingham, work lane, Smethwick, Birmingham.

Lloyd & Lloyd, Albion Tube Works, Bir  
*See index to advertisers.*

Orme, Fredk. & Co., 9, St. Andrew's-st. viaduct, London, E.C.

Robinson & Co., Studkins Iron Work bridge.

Smith, John & Sons, 18, 23 & 24, St. square, London, E.C.

SPENCER, JAMES E. & SAMUEL, st.-place, London, E.C. Works: Warehouse: 3, Three Cranes-lane, 1 gineers, Agents & Manufacturers of of plant for Telegraph, Telephone & Co's.; also sole Agents for JOHN S. Maker of all kinds of Tubes, from 5 feet, Telegraph Poles, Point Rods, Spencer, John, Vulcan Tube Works, & West Bromwich, Birmingham, & 97 st., London, E.C.

STANTON IRON WORKS CO LIMITED, Palace-chambers, 9, 1 London, S.W.

TAUNTON, R. H. & HAYWARD, Palmerston-buildings, Old Broad-st. E.C. Also Makers of Steel Tubes, criptions of Engineering work entail Tubes.

Tonks, William & Sons, 201, Moseley mingham. *See index to advertisers.*

Weldless Steel Tube Co., 303, & 304 Port-road, Birmingham.

Winfield, R. W. & Co., 47, Holborn London, E.C.

**Tube Makers—Lead.**

*F.—Tubes—Plomb.*

*G.—Röhren—Blei.*

Clark, F. A. & Son, Marlborough-wha mersmith, London, W.

Grey & Marten, Southwark-bridge, Lon

**Tube Makers—Phosphor Br**

*F.—Tubes—Phosphor-Bronze.*

*G.—Röhren—Phosphor-Bronze.*

PHOSPHOR BRONZE COMPANY, L 87, Sumner-st., Southwark-st., Lond Wire and Sheet Mills, Bagot-st., Bir Sole makers, under patents, of phosph and silicium bronze. *See index to ad*

**Line & Water Wheel Makers.**

*F.—Turbines et Roues hydrauliques.*

*G.—Turbinen und Wasserräder.*

H. & Co., York-st. Works, Lamb-  
ndon, S.E.

H., & Co., Albion Works, Essex-st.,  
Manchester.

J., 39, Wellington-quay, Dublin.

J., & Co., Southwark-park-road, Lon-  
don.

Jos., 32, Queen Victoria-st., London,  
Pathe's patent turbines. *See index to  
advertisers.*

J & CO., Essex-st. Works, Victoria-  
ment, London, W.C. Makers of  
celebrated turbines.

Jos L., Ancholme Iron Works, Brigg,  
Lincolnshire.

Jos. & Co., 28, Townsend-st., Belfast.

J. & Co., 22, Whitefriars-st., London, E.C.

Alexander & Co., Vauxhall Iron Works,  
Vauxhall-rd., London, S.W. *See index  
to advertisers.*

**\* Valve Manufacturers.**

*F.—Clapets (Fab. de).*

*G.—Ventil-Fabriken.*

Shaw (agents) 10a, Victoria-buildings,  
Manchester.

Jos., 32, Queen Victoria-st., London,

& PLATT, Salford Iron Works,  
Salford.

JOHN NENTHAL & CO., 85, Queen-  
st., and Lambeth-hill, London, E.C. *See  
index to advertisers.*

**\* Parallel—Wrought & Cast  
Iron.**

Jos., & Wilson, Limited, Yorkshire  
Works, Napier-st., Sheffield.

MILL, CHAS. & CO., 21, Cross-st.,  
London, E.C. American.

Jos., 32, Queen Victoria-st., London,

AIR, WM., Sheaf Island Works,  
Sheffield.

W. & Co., 9, St. Andrew's-st., Hol-  
bourn, London, E.C. *See index to  
advertisers.*

JOHN NENTHAL & CO., 85, Queen-  
st., and Lambeth-hill, London, E.C.  
(in, &c.) *See index to advertisers.*

**Vulcanite Manufacturers.**

*F.—Vulcanite (Fab. de).*

*G.—Gummi-Fabriken.*

Binswanger, G. & Co., 29, Aldermanbury,  
London, E.C.

Britannia Rubber & Kamptulicon Co., 32, Cannon-  
st., London, E.C. *See index to advertisers.*

Burge & Warren, 42, Kirby-st., Hatton-gdn.,  
London, E.C.

Fearn, Francis H. & Co., Trafalgar Works,  
Old Kent-rd., London, S.E.

FOSTER & WILLIAMS, 87, Grange-rd., Ber-  
mondsey, London, S.E.

FRANKS, ROBINSON & CO., 76, Milton-st.,  
Fore-st., London, E.C. TURNERS OF  
ELECTRICAL SMALL WORK IN VUL-  
CANITE, EBONITE, IVORY, ETC. *See  
index to advertisers.*

Gelbfuss, H., Moorgate-st.-buildings, London,  
E.C.

Hanover Vulcanite Company, 63, Finsbury-  
pavement, London, E.C.

HARBURG INDIA-RUBBER COMB COM-  
PANY, 138, London-wall, London, E.C. *See  
index to advertisers.*

Harburg & Vienna India Rubber Co., 10 to 14,  
Tower-chambers, Moorgate-st., London, E.C.

MOSSES & MITCHELL, 68 to 71, Chiswell-st.  
London, E.C. *See index to advertisers.*

New York Hamburg Rubber Company, 8, Cole-  
man-st., London, E.C.

Scottish Vulcanite Company, Limited, Edinburgh.  
London Offices, 5, Aldermanbury Postern,  
London-wall, E.C.

Sheath Bros., 89, City-road, London, E.C. *See  
index to advertisers.*

Winter, F., 138, London-wall, London, E.C..  
*See index to advertisers.*

Woodhouse & Rawson, 11, Queen Victoria-st.,  
London, E.C. *See index to advertisers.*

**Watch Makers (Non-magnetizable).**

*F.—Montres non-magnétisables.*

*G.—*

Dent, E. & Co., 61, Strand, London, W.C.

**\* Wheel Cutters.**

*F.—*

*G.—*

Garnham & Co., Sash-ct., Wilson-st., Finsbury,  
London, E.C. *See index to advertisers.*

OPPERMANN BROS., Brewhouse-yard, 172,  
St. John's-street, London, E.C. *See index to  
advertisers.*

**White Metal Manufacturers.**

*F.—*

*G.—*

Manganese Bronze and Brass Co., Limited, St.  
George's Wharf, Deptford, London, S.E.  
Parson's white brass.

Osborne & Co., 11, Great Garden-st., White-  
chapel-rd., London, E. *See index to advertisers.*

**MR. TRUMAN'S PATENT PURE GUTTA PERCHA COVERED WIRE.**  
**SOUND! CENTRAL!! DURABLE!!!**  
**G. CROSLAND TAYLOR.**



Covered Wire  
 Silk  
 Cotton  
 Taped  
 and  
 Braided  
 all  
 sizes  
 and makes.

Emery  
 Machines.  
 Insulators  
 Pullies  
 Shafting  
 and special  
 Bearings  
 for  
 high speeds.



## Wire Cord Manufacturers.

F.—

G.—

**Glover, W. T. & Co.** Chief office, 25, Booth-st., Manchester. London office, 28, Budge-row, E.C. Glasgow office, 85, Buchanan-st.

**Rickard, William**, Ashbourne-rd. Mills, Derby, London agent, Edwin Holloway, 2, Gutter-lane, E.C.

## Wire Coverers—Cotton.

F.—*Fils reconverts—Coton.*

G.—*Fabrik zum umspinnen des Drahtes.*

**Clegg & Shaw**, 10a, Victoria-buildings, Victoria-st., Manchester.

**Glover, W. T. & Co.**, chief office, 25, Booth-st., Manchester; London office, 28, Budge-row, E.C.; Glasgow office, 85, Buchanan-st. *See index to advertisers.*

**HENLEY'S, W. T., TELEGRAPH WORKS COMPANY, LIMITED**, offices, 8, Drapers'-gardens, London, E.C. *See index to advertisers.*

**Holloway, Edwin**, 2, Gutter-lane, Cheapside, London, E.C. Agent for W. Rickard, Derby.

**Johnson & Phillips**, 14, Union-court, Old Broad-st., E.C., and Victoria Works, Charlton, London, S.E. *See index to advertisers.*

**Koerber, J. A.**, 44, Frith-street, Soho-square, London, W.

**LONDON AND DERBY ELECTRIC WIRE COMPANY, LMTD.**, Fore-st., London, E.C. *See index to advertisers.*

**LONDON ELECTRIC WIRE COMPANY**, Anchor Works, Playhouse-yard, Golden-lane, E.C. (late of Wenlock-buildings, Ironmonger-row, London, E.C.) *See index to advertisers.*

**ORMISTON & CO.**, 25, Old-street, London, E.C.

**Phillips Bros.**, Lea Telegraph Works, Hackneywick, London, E. (late of Mackintosh-lane, Homerton, London, E.) *See index to advertisers.*

**RICKARD, WILLIAM**, Ashbourne-road Mills, Derby, London agent, Edwin Holloway, 2, Gutter-lane, E.C. *See index to advertisers.*

**TAYLOR, GEO. CROSLAND**, Deo Side Electric Works, Neston, Cheshire. *See index to advertisers.*

**Western Electric Company**, 59, Moorgate-st., London, E.C.

**WOODHOUSE & RAWSON**, 11, Queen Victoria-street, London, E.C. Every size kept in stock, and special cable made. *See index to advertisers.*

## Wire Coverers—India Rubber and Gutta Percha.

F.—*Fils recouvert—Indiarubber.*

G.—*Drahtspinner—Indiarubber.*

**Bindoff, Levi, Hodges & Co.**, Royal Victor Works, Old Ford-road, Bow, London, E.

**Clegg & Shaw**, 10a, Victoria-buildings, Victoria-st., Manchester.

**FOX, EDWIN & COMPANY, LIMITED**, offices, 5, Great Winchester-st., London, E.C.; works, Millwall, London, E.C.

## Wire Coverers—India Rubber and Gutta Percha—continued.

**Glover, W. T. & Co.**, chief office, 25, Booth-st., Manchester; London office, 28, Budge-row, E.C.; Glasgow office, 85, Buchanan-st. *See index to advertisers.*

**HENLEY'S, W. T., TELEGRAPH WORKS COMPANY, LIMITED**, offices, 8, Drapers'-gardens, London, E.C. *See index to advertisers.*

**India Rubber, Gutta Percha & Telegraph Works Co., Limited**, 100, Cannon-st., London, E.C.

**Koerber, J. A.**, 44, Frith-st., Soho-square, London, W.

**LEVY, ARMAND**, electrical Sundriesman, 252, Goswell-road, London, E.C., and 42, Rue de Ruysbrœck, Brussels. Wires covered with gutta percha, India rubber, silk, cotton, &c.

**LONDON & DERBY ELECTRIC WIRE COMPANY, LMTD.**, Fore-st., London, E.C. *See index to advertisers.*

**LONDON ELECTRIC WIRE COMPANY**, Anchor Works, Playhouse-yard, Golden-lane, E.C. (late of Wenlock-buildings, Ironmonger-row, London, E.C.) *See index to advertisers.*

**Phillips Bros.**, Lea Telegraph Works, Hackneywick, London, E. (late of Mackintosh-lane, Homerton, E.) *See index to advertisers.*

**Rickard, William**, Ashbourne-road Mills, Derby. London agent, Edwin Holloway, 2, Gutter-lane, E.C. *See index to advertisers.*

**TAYLOR, GEO. CROSLAND**, Deo Side Electric Works, Neston, Cheshire. *See index to advertisers.*

**WOODHOUSE & RAWSON**, 11, Queen Victoria-st., London, E.C. *See index to advertisers.*

## Wire Coverers—Silk.

F.—*Fils recouvert—Soie.*

G.—*Drahtspinner—Seide.*

**Clegg & Shaw**, 10a Victoria-buildings, Victoria-st., Manchester.

**Glover, W. T. & Co.**, chief office, 25, Booth-st., Manchester; London office, 28, Budge-row, E.C.; Glasgow office, 85, Buchanan-st. *See index to advertisers.*

**HENLEY'S, W. T., TELEGRAPH WORKS COMPANY, LIMITED**, offices, 8, Drapers'-gardens, London, E.C. *See index to advertisers.*

**Koerber, J. A.**, 44, Frith-st., Soho-square, London, W.

**LONDON & DERBY ELECTRIC WIRE COMPANY, LMTD.**, Fore-st., London, E.C. *See index to advertisers.*

**LONDON ELECTRIC WIRE COMPANY**, Anchor Works, Playhouse-yard, Golden-lane, E.C. (late of Wenlock-buildings, Ironmonger-row, London, E.C.) *See index to advertisers.*

**ORMISTON & CO.**, 25, Old-st., London, E.C.

**Phillips Bros.**, Lea Telegraph Works, Hackneywick, London, E. (late of Mackintosh-lane, Homerton, E.) *See index to advertisers.*

**Wire Coverers Silk—continued.**

Rickard, William, Ashbourne-road Mills, Derby.  
London agent, Edwin Holloway, 2, Gutter-lane, E.C. *See index to advertisers.*

TAYLOR, GEO. CROSLAND, Dee Side Electric Works, Newton, Cheshire. *See index to advertisers.*

WOODHOUSE & RAWSON, 11, Queen Victoria-st., London, E.C. *See index to advertisers.*

**Wire Covering Machine Manufacturers.**

*F.—Machines à recouvrir les fils.*

*G.—Maschinen zum Drahtenspinnen—Fabr.*

BARRACLOUGH & CO., LIMITED, King-st., Manchester. *See index to advertisers.*

DAVIS, John & Co., All Saints' Works, Derby.

Gimson & Co., Vulcan-st., Leicester

LEVY, ARMAND, electrical sundriesman, 252, Goswell-rd., London, E.C., and 42, Rue de Ruysbroek, Brussels. Gutta percha and India rubber covering machines

MOFFATT, ALEXANDER & CO., 26, College-st., Dowgate-hill, London, E.C. *See index to advertisers.*

SELIG, SONNENTHAL & CO., 85, Queen Victoria-st., and Lambeth-hill, London, E.C. *See index to advertisers.*

**Wire Drawers.**

*F.—Fils (Fab. de).*

*G.—Draht-Ziher.*

Abbey Tintern Wire & Tinplate Co., Tintern, near Chepstow.

Aspinall, J., South-la. Mills, Elland, Normanton.

Bateman, J., Parkhouse Mill, Low Moor, North Bierley, Bradford.

Bedford, Steer, End & Co., 78, Long-lane, London, S.E.

Bennett, W., 35, Horsefair, Kidderminster.

Binns, Alfred & Co., 4, Redcross-st., London, E.C.

Boeking, E. & Co., 101, Leadenhall-st., London, E.C.

Bolton, T., & Sons, Oakmoor Mills, Cheadle, Staffordshire

Bottomley & Hirst, Victoria Mills, Brighouse.

Brown, J. & Co., Park-lane Wire Mills, Preston.

Brown, G., Lancaster-rd., North, Preston.

Caldicot Iron & Wire Co., Caldicot, Chepstow.

Campion, J., 65, Ellesmere-road, Roman-rd., London, E.

Child, Thomas & Co., Hathersage, Derbyshire.

Clayton, J., Cleckheaton Yorkshire.

CLIFFORD CHARLES & SON, Rolling Mills, Fazley-st., Birmingham

Cocker & Sons, Hathersage, Derbyshire.

Cockcroft, W., Quarry Mill, Cleckheaton, Yorkshire

COOKES & SWINNERTON, Barrow Steel Wire Works, Barrow-in-Furness.

Crabtree, T., Barrack-st., Sheepscar, Leeds.

**Wire Drawers—continued.**

Crabtree, T., 38, Thornton-rd., Bradford  
DAVIS & TIMMINS, Bowling-green, London, E.C.

Dawans, A., & Orban, H., 9, New Bond-st., London, E.C.

Dennis, W. F. & Co., 101, Leadenhall-st., London, E.C.

Dusseldorfer, Eisen & Draht-Industrie, 101, Leadenhall-st., London, E.C.

Edelsten, Williams & Co., Newhall George-st.-parade, Birmingham. *See index to advertisers.* Steel Wire.

Elliott's Metal Co., Limited, 93, Cannon-st., London, E.C.

Everitt, A. & Sons, Kingston Metal Works, Adderley-st., Birmingham.

Fairburn, D., Bank Mill, Mirfield, Yorkshire

Fairburn, D., Sunny Bank, Battyford, North Yorkshire

Fearnley, D., Robert-town, Liversedge, Yorkshire

Felton & Guillaume W. F. Dennis & Co., 101, Leadenhall-st., London, E.C.

FOX, EDWIN & CO., LIM. Offices, 101, Winchester-st., London, E.C., works, 101, Winchester-st., London, E. Manufacturers of wire in fencing wire.

Glover, W. T. & Co., Chief office, 25, Broad-st., Manchester; London office, 28, Broad-st., London, E.C.; Glasgow office, 85, Broad-st. *See index to advertisers.*

Greening, N. & Sons, Crown Mills, Oldham, Warrington.

Haggie Bros., South Shore, Gateshead.

Hall-st. Metal Rolling Co., J. T. Buecker, 101, Hall-st. Works, Birmingham.

Hanson, Dale & Co., Colne-rd., Huddersfield

Harrison, J. & Sons, Cookley Wire Mills, Kidderminster.

Hawkins Bros. & Co., Bowling-green, Farrington-road, London, E.C.

Hayley, S. & Son, High-st. Mill, Claxton, Yorkshire.

Healey, Broadley & Healey, Little Jubilee, Clifton-bridge, Brighouse, Yorkshire.

Hewes Bros., Appleton, Widnes, Lancashire

Hill, J. C. & Co., Lam., Oakfields Iron Works, Cwmbran, Newport.

Hill, T., Clifton-bridge, Brighouse

Hirst, C., Toft's Mill, Cleckheaton, Yorkshire

Holdsworth & Marsden, Rawfold Wire Works, Cleckheaton, Yorkshire

Holt, J., School-st. Works, Taud-lane, North Lancashire.

Imperial Wire Co. (Nettlefolds, Lam.) 101, Cannon-st., Smethwick, Birmingham

Jackson, W. & Sons, 17, Sun-st., London, E.C.

Jagger, J. & G., Old Wire Mills, Thoresby, Sheffield

JOHNSON, R. & NEPHEW, 8, Old Bond-st., London, E.C.

Johnson, T. B., 4, Charles-st., London, E.C.

Kent, J. & H. & Co., New Brampton, Cheshire

**Drawers—continued.**

G., Monument-pl., Liverpool.  
 & Ricard, 11, Queen Victoria-st.,  
 , E.C.  
 & Sons, Moorland Mill, Bradford-rd.,  
 aton, Yorkshire.  
 O., Moorside, Cleckheaton, Yorkshire.  
 Morgan, Wildon Iron Works, Govilon,  
 venny, Monmouthshire.  
 , Victoria Mills, Brighouse.  
 s. & Co., 3, Queen-st.-pl., Cannon-st.,  
 , E.C.  
 RD WIRE, IRON & STEEL CO.,  
 ED, 14, St. Mary Axe, London, E.C.  
 llam-lane, Warrington.  
 O., Hightown, Liversedge, Yorkshire.  
 R., Victoria Mills, Brighouse.  
 ls, Limited, 16, Broad-st., Birmingham.  
 ON & CO., 25, Old-st., London, E.C.  
 F., 34, New-st., Worcester.  
 Chas., 21, Great Winchester-st.,  
 , E.C.  
 PS BROS., Lea Telegraph Works,  
 y Wick, London, E. (late of Mackin-  
 ne, Homerton, London, E.)  
 IOR BRONZE COMPANY, LIM.,  
 mner-st., Southwark, London, S.E.  
 Sheet Mills, Bagot-st., Birmingham.  
 kers, under patents, of Phosphor Bronze  
 icium Bronze.  
 , F. W., 16, Hill-st., Finsbury,  
 , E.C. Brass, H.C. copper, German  
 platinum, &c.  
 , J. & Co., 132, Queen Victoria-st.,  
 , E.C.  
 G., 9, New Broad-st., London, E.C.  
 G., Summerford-brook, Willenhall.  
 l., Brook Foot Wire Mills, Horsforth,  
 . S., Norgate, Bradford.  
 n, J., 1, Bank-buildings, Manchester-  
 radford.  
 L, W. & CO., Springfield-rd., Glasgow.  
 ., 79, Victoria-st., Belfast.  
 L, D. & CO., 2, Poet's Corner,  
 , S.W.  
 s., Nutsford-vale Works, West Gorton,  
 ster.  
 . W., 63, Bishopsgate-st. Within,  
 , E.C.  
 ., West-house, Wyke, Bradford.  
 & Sons, Bradford-road, Brighouse,  
 ire.  
 row Iron Company, 93, Upper Thames-  
 don, E.C.  
 l., 1A, Shrub-pl., Leith-walk, Edinburgh.  
 redk. & Co., Caledonia Works, Halifax.  
 B. & Co., 61, West Regent-st., Glasgow.  
 & Sons, 18, St. John's-square, Clerk-  
 London, E.C.  
 F. & G. W. & Co., 38A, Shude-hill,  
 ster.

**Wire Drawers—continued.**

Stanton, Fredk., & Edwin, wire for scratch  
 brushes for electric purposes, Lewisham, Lon-  
 don, S.E.  
 Stott, J. F., Buxton-road, Huddersfield.  
 Stott, F., Hartshead, Normanton.  
 Swires, F., Moortop, Checkheaton, Yorkshire.  
 TAYLOR, D. F. & CO., New Hall Works,  
 George-st. parade, Birmingham. Brass &  
 Copper & high conductivity Copper Wire.  
 Taylor, Saml. Irwin, 5, Little Love-lane, Wood-  
 st., London, E.C.  
 Thomée, F., 8, Coleman-st., London, E.C.  
 Thomson, Sterne & Co., North Woodside-road,  
 Glasgow.  
 Trurnit, F., 18, Finsbury-circus, London, E.C.  
 Tyne Wire Drawing Co., South-shore, Gateshead.  
 Vivian, H. H. & Co. (Wm. George Hughes,  
 manager), 31, Holly-st., Sheffield.  
 Walker, R., Walker's Mills, Northgate, Cleck-  
 heaton, Yorkshire.  
 Walker, W., Hartshead, Normanton.  
 WHITECROSS WIRE & IRON COMPANY,  
 LIMITED, Milner-st., Warrington.  
 Whiteley, Eli & Co., River-st., Rochdale, Lan-  
 cashire.  
 Winterbottom & March, Dearne Wire Mills,  
 Barnsley, Yorkshire.  
 Witte & Kämper (R. Uhlich & Müller, agents),  
 37, King William-st., London, E.C.  
 Wood, J. & Bros., Grove Mills, Brighouse,  
 Yorkshire.  
 Wood, J. & Sons, Wilkin Royd Mills, Brighouse,  
 Yorkshire.  
 Wood, W., Little John Mill, Clifton-bridge,  
 Brighouse, Yorkshire.  
 Woodhead, J., 8, Mill-street, Brighouse, York-  
 shire.  
 Wordsworth, Geo. & Sons, New Wire Mill,  
 Thurgoland, Sheffield.  
 Wright, P. & Sons, Broadwell Forge, Oldbury.

**Wire Draw-Plate Makers.**

*P.—Plaques Pour Tréfileurs.*

*G.—Drahteisen-Fabriken.*

Orme, Frederick & Co., 9, St. Andrew's-st.,  
 Holborn-viaduct, London, E.C. *See index to  
 advertisers.*  
 HOLDSWORTH, SAMUEL, 54, Spencer-st.,  
 London, E.C. Jewel Holes for drawing Wire.

**Wire Gauge Manufacturers.**

*F.—*

*G.—Draht-Messer.*

Apps, A., 433, Strand, London, W.C.  
 Potter, F. W., 16, Hill-st., Finsbury, London,  
 E.C. (Micrometers.)  
 RYLANDS BROS., LIMITED, 116, Church-st.,  
 Warrington.

## Wire Jewel Hole Gauge Makers.

*F.—*

*G.—*

Holdsworth, Samuel, 54, Spencer-st., Clerkenwell, London, E.C.

## Wire Manufacturers—Brass.

*F.—Fils—bronze.*

*G.—Draht—Messing.*

Basso & Selve, Jeffrey's-square, St. Mary Axe, London, E.C.

Birmingham Battery & Metal Co., 21, Gresham-house, Old Broad-st., London, E.C.

BLEWS, WILLIAM & SONS (Established 1782), 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies.

Davis & Timmins, Bowling-green-lane, London, E.C. *See index to advertisers.*

Elliott's Metal Co., Limited, Selly Oak Works, Birmingham.

FOX, EDWIN & CO., LIMITED, offices, 5, Gt. Winchester-st., London, E.C.; works, Millwall, London, E.

Hall-street Metal Rolling Company (J. T. Bissaker, manager), Hall-st. Works, Birmingham.

Heaton & Dugard, 77 to 80, Lower Loveday-st., Birmingham.

Heaton, Ralph, & Sons, Icknield-st., Birm'gham.

Stieber, John Balth, & Son, 5, Godliman-st., London, E.C.

Vivian, H. H. & Co., 10, Laurence Pountney-lane, London, E.C.

Winfield, R. W., & Co., Cambridge-st. Works, Birmingham.

## Wire Manufacturers—Copper.

*F.—Fils—cuivre.*

*G.—Draht—Kupfer*

Basso & Selve, Jeffery's-sq., St. Mary-Axe, London, E.C.

Birmingham Battery & Metal Co., 21, Gresham-house, Old Broad-st., London, E.C.

BLEWS, WILLIAM & SONS (Established 1782), 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies.

BOLTON, T. & SONS, Broad-street Metal Works, Birmingham, & Oakmoor, Cheadle, Staffordshire.

CLIFFORD, CHARLES & SON, Rolling Mills, Fazeley-st., Birmingham.

Davis & Timmins, Bowling Green-lane, London, E.C. *See index to advertisers.*

Elliott's Metal Co., Limited, Selly Oak Works, Birmingham.

## Wire Manufacturers—Copper—con

FOX, EDWIN & CO., LIMITED, o Great Winchester-st., London, E.C.; Millwall, London, E.

Glover, W. T. & Co., chief offices, 25, B Manchester; London office, 28, Bu E.C.; Glasgow office, 85, Buchanan-index to advertisers.

Hall-street Metal Rolling Company (J seker, manager), Hall-st. Works, Birn Heaton & Dugard, 77 to 80, Lower Lov Birmingham.

Heaton, Ralph, & Sons, Icknield-st., Bir Newton Keates, & Co., 28, King-st., Li

ORMISTON & CO., 25, Old-st., Lond Rickard, William, Ashbourne-road Mill

London agent, Edwin Holloway, 2 lane, E.C. *See index to advertisers.*

Stieber, John Balth, & Son, 5, Godl London, E.C.

Winfield, R. W., & Co., Cambridge-st Birmingham.

## Wire Manufacturers—Cover

*F.—Fils—reconverts.*

*G.—Lunaponneuer Draht.*

BARRACLOUGH THOS. & CO., LI 8, King-st., Manchester. *See index to a*

Callenders Bitumen Telegraph & Water Limited, 101, Loadenhall-st., London

CLARK, L., MUIRHEAD & CO., 23, l st., London, S.W.

Clegg & Shaw, 10A, Victoria-buildings, st., Manchester. *See index to advertis*

Dixon, Corbitt & Spencer, 26, Commer east, London, E.

Fuller, John Crisp, & Son, 547, Old F Bow, London, E.

Glover, W. T. & Co., chief office, 25, l Manchester; London office, 28, Bu E.C.; Glasgow office, 85, Buchanan index to advertisers.

KING & CO., Western Electric Works Wine-st., Bristol.

LEVY, ARMAND, electrical sundries rubber, gutta percha, composition, covered cables, silk, cotton, covered w Goswell-road, London, E.C.; and 42 Ruysbroeck, Brussels. *See index to a*

LONDON & DERBY ELECTRIC COMPANY, Fore-st., London, E index to advertisers.

LONDON ELECTRIC WIRE CO. Anchor Works, Playhouse-yard, Gol E.C., late of Wenlock-buildings, Iron row, London, E.C. Manufacturers c wires of all descriptions for electrica ments, dynamo machines, bell and ho &c. Fancy paraffined wires specially for telephone and other indoor cor *See index to advertisers.*

Ormiston & Co., 25, Old-st., London, E



## Manufacturers—Covered—continued.

Bros., Lea Telegraph Works, Hackney London, E. (late of Mackintosh-lane, n, E.) *See index to advertisers.*

ROS., 12, Wharf-rd., London, N. *See index to advertisers.*

William, Ashbourne-rd. Mills, Derby. n agent, Edwin Holloway, 2, Gutter-lane, E.C. *See index to advertisers.*

MAX, 2, Coleman-st.-buildings, London, E.C.

Electric Company, 59, Moorgate-st., London, E.C.

## Manufacturers—Galvanized Iron.

*F.—Fils—Fer galvanisé.*

*G.—Draht—Galvanisches Eisen.*

Mascall & Son, 29, High-st., West Cowes, Isle of Wight, West Bute Docks, Cardiff.

W. L., Monmore-green, Wolverhampton.

S.W., 5, St. John's-road, Kate's-hill, London, E.C.

& Co., Albion Works, Mount-pleasant, Birmingham, Staffordshire.

& A., Clarence-st. Works, W'hampton.

S & SWINNERTON, Barrow Steel Works, Barrow-in-Furness.

E., Crown Galvanized Iron Works, Church-road, Wolverhampton.

Thomas, Ettingshall, Wolverhampton.

S. J. & E., Vulcan Works, W'hampton.

DWIN & CO., LIMITED. Offices, 5, Winchester-st., London, E.C. Works, Millwall, London, E.

Dak Iron & Galvanized Iron and Wire Works, Wolverhampton.

Hilton, Pearson-st., Wolverhampton.

. & F., Pountney-st., Wolverhampton.

ON, R. & NEPHEW, 8, Great Winchester-st., London, E.C.

ros. & Co., Ablow-st., Wolverhampton.

. & Co., Drayton-st. West, W'hampton.

J., Dudley-st., Bilston.

William, Ashbourne-road Mills, Derby. n agent, Edwin Holloway, 2, Gutter-lane, London, E.C.

DS BROS., LIMITED, 116, Church-st., Birmingham.

McLean, Gartcoch, Rolling Mills, Coatbridge, Lanarkshire.

C. & Son, Pountney-st., Wolverhampton.

Taylor, Redcliff-st., Bristol.

R., & Müller, 37, King William-st., London, E.C.

l, J., Cave-st., St. Paul's, Bristol.

& Ewens, Central Iron Works, Cheltenham.

D. S., 153, Dudley-rd., Wolverhampton.

E., 30, Stafford-st., Willenhall, near Wolverhampton.

## Wire Manufrs.—Galvanized Iron—contd.

WHITECROSS WIRE & IRON COMPANY, LIMITED, Milner-st., Warrington.

Witte & Kämper (R. Uhlich & Müller, agents), 37, King William-st., London, E.C.

Wolverhampton Corrugated Iron Co., Church-lane, Wolverhampton.

Wright, W. B. & Co., St. Philip's-marsh, Bristol.

## Wire Manufacturers—German Silver.

*F.—Fils—Maillechort.*

*G.—Draht—Neusilber.*

ARMSTRONG, STEVENS & CO., 15, Whittall-st., Birmingham.

Clegg & Shaw, 10A, Victoria-buildings, Victoria-st., Manchester. *See index to advertisers.*

Glover, W. T. & Co. Chief office, 25, Booth-st., Manchester; London office, 28, Budge-row, E.C.; Glasgow office, 85, Buchanan-st. *See index to advertisers.*

ORMISTON & CO., 25, Old-st., London, E.C.

Rickard William, Ashbourne-road Mills, Derby. London agent, Edwin Holloway, 2, Gutter-lane, London, E.C. *See index to advertisers.*

Smith, John & Son, 18, 23-24, St. John's-sq., London.

## Wire Manufacturers—Insulated.

*F.—Fils-isolés.*

*G.—Isolatorischer Draht.*

Anderson & Munro, 136, Bothwell-st., Glasgow. Baughan, W. H. & Co., Charlbury, Oxon. *See index to advertisers.*

Clegg & Shaw, 10a, Victoria-buildings, Victoria-st., Manchester. *See index to advertisers.*

FOX, EDWIN & Co., Limited, offices, 5, Great Winchester-street, London, E.C.; works, Millwall, London, E.

Gent, J. T. & Co., Faraday Works, King Richard's-rd., Leicester. *See index to advertisers.*

Glover, W. T. & Co., chief office, 25, Booth-st., Manchester: London office, 28, Budge-row, E.C.; Glasgow office, 85, Buchanan-st. *See index to advertisers.*

Kinetic Engineering Company, 1, Wardrobe-place, Doctors'-commons, London, E.C.

LONDON & DERBY ELECTRIC WIRE COMPANY, LIMITED, 122, Fore-st., Cripplegate, London, E.C. *See index to advertisers.*

LONDON ELECTRIC WIRE COMPANY, Anchor Works, Playhouse-yard, Golden-lane, London, E.C., late of Wenlock-buildings, Ironmonger-row, London, E.C., Manufacturers of insulated wires of all descriptions for electrical instruments, dynamo-machines, bell-house, telephone work, &c. Contractors to the principal Government Departments and Electric Light and Telephone Companies. *See index to advertisers.*

**Wire Manufacturers—Insulated—contd.**

Phillips Bros., Lea Telegraph Works, Hackney Wick, London, E., late of Mackintosh-lane, Homerton, London, E. *See index to advertisers.*  
 Rickard, William, Ashbourne-rd. Mills, Derby. London agent, Edwin Holloway, 2, Gutter-lane, London, E.C. *See index to advertisers.*  
 TAYLOR, GEORGE CROSLAND, Dee Side Electric Works, Neston, Cheshire. *See index to advertisers.*  
 Walters, Daniel & Sons, 43 & 45, Newgate-st., London, E.C. Wire Insulating Machine, patented 1881.  
 Western Electric Company, 59, Moorgate-st., London, E.C.

**Wire Manufacturers—Iron.**

*F.—Fils—Fer.*

*G.—Draht—Eisen.*

Binns, J. & A., West Mount, Wire Mills, Halifax.  
 BLEWS, WILLIAM & SONS (agents), 9 to 15, New Bartholomew-st., Birmingham; Dom Moltshanoff, Negliuny, Moscow; and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. (Established 1782.)  
 Braby, F., & Co., Garngad Works, Glasgow.  
 Burt, J. H. & Co., 1A, Laurence Pountney-lane, London, E.C.  
 Cornforth Bros., 155 and 156, Dartmouth-st., Birmingham.  
 Davis & Timmins, Bowling-green-lane, London, E.C. *See index to advertisers.*  
 Dilwynn & Co., Cambrian-place, Swansea.  
 Edelsten, Williams & Co., Newhall Works, George-st.-parade, Birmingham.  
 FOX, EDWIN & CO., LIMITED. Offices, 6, Gt. Winchester-st., London, E.C.; works, Millwall, London, E. For iron and steel fencing.  
 Fox, Sam. & Co., Limited, Stockbridge Works, Stockbridge, Sheffield.  
 Haybridge Iron Co., Limited, Dallam-lane, Warrington.  
 Hyde, J., 14, George-st., Parade, Birmingham.  
 Imrie, D., Bank-chambers, Temple-st., Swansea.  
 Iron Wire, Wire Rope & Fencing Company, 2, Poet's-corner, London, S.W.  
 JOHNSON, R. & NEPHEW, 8, Great Winchester-st., London, E.C.  
 Lambert, C. & Co., Port Tennant Copper Works, Swansea.  
 LONGFORD WIRE, IRON & STEEL COMPANY, LIMITED, 14, St. Mary-axe, London, E.C., and Dallam-lane, Warrington.  
 Mountain, Wm. & Sons, Trafalgar Works, Vincent-st., Newcastle.  
 Rickard, William, Ashbourne-rd. Mills, Derby. London agent, Edwin Holloway, 2, Gutter-lane, E.C. *See index to advertisers.*  
 RYLANDS BROS, LIMITED, 116, Church-st., Warrington.

**Wire Manufacturers—Iron—continues**

Schulte, Chas. (agent), Exchange-bui Stephenson-place, Birmingham. Manufacturer of wire rods, telegraph and rope  
 Smith, Fredk. & Co., Caledonia Works, F Tindale Spelter Company, Newcastle-on-Vivian & Sons, Hafod Works, Swansea.  
 Webster & Horsfall, Killamarsh, Chester Williams, Foster & Co., Morfa Copper Swansea.  
 Witte & Kämper (R. Uhlich & Müller, 37, King William-st., London, E.C.  
 Wood, William, Little John Mill, Clifton-Brighouse.

**Wire Manufacturers—Phosphor B**

*F.—Fils—Phosphor Bronze.*

*G.—Draht—Phosphor Bronze.*

FOX, EDWIN, & CO., LIMITED, off Gt. Winchester-st., London, E.C.; Millwall, London, E.  
 PHOSPHOR BRONZE COMPANY, LIM 87, Sumner-st., Southwark, London, and Wire and Sheet Mills, Bagot-st mingham. Sole makers, under pate phosphor bronze and silicium bronze. *to advertisers.*

**Wire Manufacturers—Steel.**

*F.—Fils (Fab. de)—Acier.*

*G.—Draht-Fabriken—Stahl.*

Cocker & Sons, Hathersage, Sheffield.  
 COOKES & SWINNERTON, Barrow Wire Works, Barrow-in-Furness.  
 Cornforth Bros., 155 & 156, Dartmo Birmingham.  
 FOX, EDWIN, & CO., LIMITED, Gt. Winchester-st., London, E.C.; Millwall, London, E.  
 JOHNSON, R., & NEPHEW, 8, Gt chester-st., London, E.C.  
 Kugel & Berg, Jeffrey's-square, St. Ma London, E.C.  
 LONGFORD WIRE, IRON & STEE LIMITED, 14, St. Mary-axe, London and Dalham-lane, Warrington.  
 Rollason, Carmi, A. T., & Co., 40, Rich Dartmouth-st., Birmingham.  
 RYLANDS BROS., LIMITED, 116, C st., Warrington.  
 Sanderson Bros. & Co., Limited, 19, W London, E.C.  
 Smith, J. & Son, 18, St. John's-square, C well, London, E.C.  
 Witte & Kämper (R. Uhlich & Müller, 37, King William-st., London, E.C.  
 Woodhead, J., Mill-st., Brighouse.

## **Manufacturers—Telegraph.**

*Fils télégraphiques (Fab. de).*

*Drakt Fabriken für Telegraphie.*

NG, STEVENS & CO., 15, Whittall-  
nham.

ve, Jeffrey's-square, St. Mary Axe,  
E.C.

A., West Mount Wire Mills, Halifax.

LLIAM & SONS (agents), 9 to 15,  
tholomew-st., Birmingham; Don  
ff, Negliuny, Moscow; and 38, West  
, London, E.C. Contractors to the  
Moscow, Mexico, San Paulo, &c. Gas  
s. (Established, 1782.)

, & Co., Limited, Saville-st., Sheffield.

, MUIRHEAD & CO., 23, Regency-  
minster, London, S.W.

ow, 10a, Victoria-buildings, Victoria-  
hester. *See index to advertisers.*

& Co., Limited, Tinsley Steel and  
ks, Sheffield.

& SWINNERTON, Barrow Steel  
rks, Barrow-in-Furness.

ros., 155, Dartmouth-st., Birmingham.

I., jun., & Co., Tinsley, Sheffield.

& Holland, Percy-road, Greet, Bir-

nmmins, Bowling-green-lane, London,  
*See index to advertisers.*

F., 101, Leadenhall-st., London, E.C.  
bitt, & Spencer, 26, Commercial-rd.-  
don, E.

& Co., Windsor Iron Works, Speak-  
Liverpool.

N, WILLIAMS & CO., Newhall  
George-st.-parade, Birmingham.

etal Company, Limited, Selly Oak  
Birmingham.

uilleaume (W. F. Dennis & Co.) 101,  
all-st., London, E.C. *See index to*  
*s.*

WIN, & CO., LIMITED, offices, 5,  
chester-st., London, E.C.; works,  
London, E.

: Co., Limited, Stocks Bridge Works,  
Sheffield.

. T., & Co., chief office, 25, Booth-st.,  
ter; London office, 28, Budge-row,  
lasgow office, 85, Buchanan-st. *See*  
*advertisers.*

R., & Co., Upper Rawfold's Works,  
ton.

etal Rolling Company (J. T. Bisseker,  
, Hall-st. Works, Birmingham.

n, E., Victoria-st., East Halifax.

, & Sons, Icknield-st. East, B'ham.

'S W. T. TELEGRAPH WORKS

NY, LIMITED, offices, 8, Drapers'-  
London, E.C. *See index to advertisers.*

Crowther & Co., Tinsley, Rotherham.

ard & Co., Newport Wire Mills,  
orough.

## **Wire Manufacturers—Telegraph—contd.**

**IRON WIRE, WIRE ROPE, & FENCING CO.**

2, Poet's-corner, Westminster, London, S.W.  
Jenkins, Thomas & Leonard, 42, George-st.-  
parade, Birmingham.

JOHNSON, R., & NEPHEW, 8, Great Win-  
chester-st., London, E.C.

Koerber, J. A., 44, Frith-st., Soho-square, Lon-  
don, W.

Kugel & Berg, Jeffrey's-square, St. Mary-axe,  
London, E.C.

LEVY, ARMAND, 252, Goswell-rd., London,  
E.C., and 42, Rue de Ruysbroeck, Brussels.  
Electrical sundriesman. *See index to adver-*  
*tisers.*

LONDON AND DERBY ELECTRIC WIRE  
COMPANY, LMTD., Fore-st., London, E.C.  
*See index to advertisers.*

LONDON ELECTRIC WIRE COMPANY.  
Anchor Works, Playhouse-yard, Golden-lane,  
E.C. (late of Wenlock-buildings, Ironmonger-  
row, Old-street, London, E.C.) *See index to*  
*advertisers.*

Middlehurst, P., Mill-lane, Crank, Rainford, St.  
Helen's.

Moore & Manby, 3, Billiter-square, London, E.C.  
Patchett, G., Sedburgh Mill, Halifax.

PHILLIPS BROS., Lea Telegraph Works,  
Hackney-wick, E. (late of Mackintosh-lane,  
Homerton, London, E.) *See index to advertisers.*

PHOSPHOR BRONZE COMPANY, LMTD.,  
87, Sumner-st., Southwark-st., London, S.E.;  
wire and sheet mills, Bagot-st., Birmingham.  
Sole makers, under patents, of Phosphor  
Bronze and Silicium Bronze. *See index to ad-*  
*vertisers.*

Power, F. A., & Co., Midland Wire Mills, Saltley,  
Birmingham.

Pratt, W. J., Well-lane, Halifax.

Ramsden, Camm & Co., Brighouse, Yorkshire;  
London office, 72, King William-st., E.C.

Rickard, William, Ashbourne-road Mills, Derby.  
London agent, Edwin Holloway, 2, Gutter-  
lane, London, E.C. *See index to advertisers.*

Rigby, J. & Sons, Old and New Britannia Wks.,  
Wednesbury.

Rindfleisch, E. & Co., 45, Hope-st., Glasgow.

Rogers, G. F., 5, Great Winchester-st., London,  
E.C.

Royston, J., Son & Co., Lea Bank Wire Mills,  
Shrogg's-road, Halifax.

RYLANDS BROS., LIMITED, 116, Church-st.,  
Warrington.

Scott Bros., Nutsford Vale Works, West Gorton,  
Manchester.

Share, G. W. & Co., 72, King William-st.,  
London, E.C.

Shaw, J., Yorkshire Wire Rope and Fencing  
Works, Soho-st., Eccleshall-road, Sheffield.

Shropshire Iron Company, Limited, Hadley,  
Wellington, Salop.

Smith, Frederick & Co., Caledonia Works, Halifax.  
Patent Galvanized High Conductivity Tele-  
graph Wire to all specifications.

**Wire Manufacturers—Telegraph** *contd.*

TAYLER, D. F. & CO., New Hall Works, George-st.-parade, Birmingham

Western Electric Company, 59, Moorgate-st., London, E.C.

WHITECROSS WIRE & IRON COMPANY, LIMITED, Milner-st., Warrington

Wilkes, J. & Sons, Liverpool-st., Birmingham.

Witte & Kamper R Uhlrich & Muller, (agents), 37, King William-st., London, E.C.

Wright, J. & E., Universe Works, Garrison-st., Birmingham.

**Wire Manufacturers—Telephone.**

*F.—Fils téléphoniques (Fab. de).*

*G.—Dräht für telephon*

ARMSTRONG, STEVENS & CO., 15, Whittall-st., Birmingham

Basse & Selve, Jeffrey's-square, St. Mary-axe, London, E.C.

BLEWS WILLIAM & SONS (agents), 9 to 16, New Bartholomew-st., Birmingham. Dom Moltshanoff, Neghuny, Moscow, and 38, West Smithfield, London, E.C. Contractors to the Cities of Moscow, Mexico, San Paulo, &c. Gas Companies. Established 1782

Clegg & Shaw, 104, Victoria-buildings, Victoria-st., Manchester. *See index to advertisers*

COOKES & SWINNERTON, Barrow Steel Wire Works, Barrow-in-Furness.

Davis & Timmins, Bowling-green-lane, London, E.C. *See index to advertisers*

EDELSTEN, WILLIAMS, & CO., Newhall Works, George-st.-parade, Birmingham

Felton & Grubbaine W. F. Dennis & Co., 101, Leadenhall-st., London, E.C. *See index to advertisers*

FOX, EDWIN, & COMPANY, LIMITED. Offices, 5, Great Winchester-st., London, E.C. Works, Millwall, London, E.

Glover, W. T. & Co. Chief office, 25, Booth-st., Manchester. London office, 28, Bulge-row, E.C. Glasgow office, 89, Buchanan-st. *See index to advertisers*

Hall-st Metal Rolling Co. J. Buseker, manager., Hall-st Works, Birmingham.

HENLEY'S, W. F., TELEGRAPH WORKS CO., LIMITED, offices, 8, Dimpers' gardens, London, E.C. *See index to advertisers*

Johnson, R., & Nephew, 8, Gt. Winchester-st., London, E.C.

Koerber, J. A., 11, Frith-street, Soho-square, London, W.

Kugel & Berg, Jeffrey's-square, St. Mary-axe, London, E.C.

LEVY ARMAND, 252, Goswell-rd. London, E.C. and 42, Rue de Bayebroek, Brussels. Electrical sundriesman. *See index to advertisers*

LONDON & DERBY ELECTRIC WIRE CO., LIMITED, Foss-st., London, E.C. *See index to advertisers*

LONDON ELECTRIC WIRE CO., Anchor Works, Payhouse-yard Golden-lane London, E.C. Late of Wenlock-buildings, Trompenger-row, E.C. Makers of special wire for telephone purposes. *See index to advertisers.*

**Wire Manufacturers—Telephone**

PHILLIPS BROS. Ltd Telegraph Works, New-wick, London, E., late of Mackintosh, Hemerton, London, E. *See index to advertisers*

PHOSPHOR BRONZE CO., LIMITED, Sunner-st., Southwark, London, S.

and sheet mills, Bagat-st., Birmingham makers, under patents, of phosphor beryllium bronze. *See index to advertisers*

Ramsden, Camm & Co., 72, King William-st., London, E.C., and Brighouse, Yorks.

Rickard, William, Ashbourne-road Mill Lane, London, E.C. *See index to advertisers*

Rogers, G. T., 5, Gt. Winchester-st., London, E.C.

RYLANDS BROS., LIMITED, 116, Chancery-lane, Warrington

Smith, Fredk. & Co., Caledonia Works, 3, Tayler, D. F. & Co., New Hall Works, George-st.-parade, Birmingham

Western Electric Company, 59, Moorgate-st., London, E.C.

Whitecross Wire & Iron Co., Limited, Mill-lane, Warrington

Witte & Kamper R Uhlrich and Muller, 37, King William-st. London, E.C.

Barnacloough, Thomas & Co., Limited, 1, St. Manchester. *See index to advertisers*

Bastin, E. P. & Co. works, West End, Middlesex. London office, 49, Finsburyment, London, E.C.

Moffatt, Alexander & Co., 26, College-gate-hill, London, E.C. *See index to advertisers*

Smith, Arch & Stevens, 48, Leicester-st., London, W.C.

**Wire Rope Machine Makers**

*F.—*

*G.—Maschinenbau für Drahtseile.*

Barnacloough, Thomas & Co., Limited, 1, St. Manchester. *See index to advertisers*

Bastin, E. P. & Co., works, West End, Middlesex. London office, 49, Finsburyment, E.C.

Moffatt, Alex. & Co., 26, College-st., London, E.C. *See index to advertisers*

Smith, Arch & Stevens, 48, Leicester-st., London, W.C.

**Wire Rope Manufacturers**

*F.—Corde (Fab. de).*

*G.—Seile*

Back, Usher, 77, Blackfriars road, London, E.C.

Banks Bros., Stratford-st., Millwall, London, E.

Black, John & Co., 204, Fildes-st. Glasgow

Bossmann, R. & Co., 72, Finsburyment, London, E.C.

Brent, W. H., 1, Emmett-st., Poplar, London, E.

Bullivant & Co., West Ferry-road, London, E.

Burt, J. H. & Co., 14, Laurence Pountney-lane, London, E.C.

Cameron, John & Co., 9, Oswald-st., Glasgow



## ope Manufacturers—continued.

Shaw, 10a, Victoria-buildings, Victoria-  
nchester.

J. & SWINNERTON, Barrow Steel  
Works, Barrow-in-Furness.

Speeding Bros., Wear, Hemp & Wire  
Works, Sanderland (Messrs. J. A. Black  
London agents), Leadenhall-house,  
hall-st., London, E.C.

Joseph & Sons, St. Ann's Ropery,  
tle-on-Tyne.

rwood & Humble, Byker Ropery, New-  
n-Tyne.

& Co., 23, Gt. George-st., London, S.W.  
win & Co., 13, Emmett-st., Poplar,  
, E.

Guillaume (W. F. Dennis & Co.,  
, 101, Leadenhall-st., London, E.C.

OWIN & CO., LIMITED, offices, 5,  
Winchester-st., London, E.C., works,  
l, London, E.

Bibby & Co., Head Office, Chapel-st.,  
ol.

'T. & Co., chief office, 25, Booth-st.,  
ster: London office, 28, Budge-row,  
, E.C.; (Glasgow office, 85, Buchanan-  
gown. See index to advertisers.

Hood & Co., Queen-st., Newcastle-  
e.

'S W. T., TELEGRAPH WORKS  
NY, LIMITED, offices, 8, Drapers'-  
, London, E.C. See index to advertisers.

OR BRONZE COMPANY, LIM.,  
nner-st., Southwark, London, S.E.

Sheet Mills, Bagot-st., Birmingham.  
akers, under patents, of Phosphor  
& Silicium Bronze. See index to ad-

William, Ashbourne-rd. Mills, Derby.  
Holloway, London agent), 2, Gutter-  
ndon, E.C. See index to advertisers.

S BROS., LIMITED, 116, Church-  
rington.

. & Co., 110, Hope-st., Glasgow.

& W. (H. G. Copeland & Co., agents),  
er-avenue, London, E.C.

'm. & Sons, Limited, Welsh-back and  
marsh, Bristol.

. W. & J., 21, West Nile-st., Glasgow.

ROSS WIRE & IRON COMPANY,  
ED, Milner-st., Warrington.

## re Staples Manufacturers.

F.—*Crochets pour fils de fer.*

G.—*Draht-Krampen.*

& SWINNERTON, Barrow Steel  
Works, Barrow-in-Furness.

WIN & CO., LIM. Offices, 5, Great  
ter-st., London, E.C.; Works, Mill-  
ndon, E.

. & Sons, Brighouse, Yorkshire.

DS & CO., 57, New Compton-st.,  
W.C. Flat wire staples especially  
for fixing conducting wires. See index  
iers.

## Wire Staples Manufacturers—continued.

RYLANDS BROS., Lim., 116, Church-st.,  
Warrington.

Western Electric Company, 59, Moorgate-st.,  
London, E.C.

## \* Wire Workers and Weavers.

F.—*Fils (Façonneurs de).*

G.—

CLARK, J., 46 & 47, High-st., Broad-st., W.C.

POTTER, F. W., 16, Hill-st, Finsbury-sq.,  
London, E.C.

Reynolds & Co., 57, New Compton-st.,  
London, W.C. See index to advertisers.

RIDDELL, WM. & CO., Springfield-rd.,  
Glasgow.

ROWAT, ALEX. & CO., 25, Candleriggs,  
Glasgow.

## \* Wood-working Machinists.

F.—*Machinistes (façonnant le bois).*

G.—*Frainer.*

Orme, Fredk. & Co., 9, St. Andrew's-st.,  
Holborn-viaduct, London, E.C. See index to  
advertisers.

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 WITH  
 NAMES OF DIRECTORS,  
 PARTICULARS OF CAPITAL,  
 LENGTH OF CABLES, &c.

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WITH

NAMES OF DIRECTORS,

PARTICULARS OF CAPITAL, LENGTH OF CABLES,

**ANGLO-AMERICAN TELEGRAPH COMPANY, LIMITED.** General Office: Old Broad-street, London, E.C. T. H. WELLS Esq., Secretary. H. WEAVER, Esq., Managing Director. Directors: The Right Hon. Viscount Monck, Chairman. Sir James Anderson, Bart., Old Broad-street, E.C. William Barber, Esq., 9, The Beltons, Brompton, S.W. F. B. B. Esq., 54, Lombard-street, E.C. Charles Crapchett, Esq., 11, Avenue de Messine, Paris. William S. Conard, Esq., 6, St. Helen's-place, E.C. Cyrus W. Field, Esq., 67, Broadway, New York. Sir Daniel Gooch, Bart., M.P., Clewer Park, Windsor. The Hon. Robert G. G. Esq., 24, Mount-street, W. The Most Hon. the Marquis of Tweeddale. Auditors: Joshua G. Esq. and Francis Glass, Esq.

**BRAZILIAN SUBMARINE TELEGRAPH COMPANY, LIMITED.** Head Office: 8, Great Winchester-street, London, E.C. Richard COFFETT, Esq., Secretary. F. ELLER, Esq., Managing Director. Directors: The Right Hon. Viscount Monck, Chairman. Sir James Anderson, Bart., Vice-Chairman. The Hon. W. St. John F. Brodribk, M.P. Sir F. P. B. Esq., Henry Daniel Gooch, Esq., Frederick Yule, Esq. Directors represent the Company abroad: Senhor Carlos Ferreres dos Santos Silva, Lisbon, and Senhor Frederico Taylor (Rio de Janeiro). Agents: Lisbon, Col. F. L. M. Albuquerque, Esq. Jules Despecher, 28, rue Camartin. P. de M. M. Messrs. Blandy Brothers & Co., Vincent, Messrs. Milers & Nephew. Stations: London, 11, Old Broad-street, E.C. 4. L. H. 5, Exchange-buildings, Portugal, Lisbon and Caravelles, Madeira, Funchal; U. Verde Islands, St. Vincent, Brazil, Pernambuco, and from any Postal Station in Great Britain and Ireland. When not given in at the Company's offices, telegrams should be directed "Eastern," these words being signalled by the postal authorities free of charge. Books of tariffs, &c., forwarded post free on application to the Company's chief offices, 8, Great Winchester-street, London, E.C.

**COMPAGNIE FRANCAISE DU TELEGRAPHE DE PARIS A NEW YORK.** Offices for the reception of messages: London, 24, Royal Exchange, E.C. New York, Broadway, and all postal telegraph offices.

**COMPANY FOR THE LAYING AND MAINTENANCE OF THE GERMAN-NORWEGIAN SUBMARINE CABLE.** London agency, 56, Old Broad-street, E.C. 1,690,000 Marks. Reserve fund 47,605 Marks, being an increase of 14,954 Marks; forward 1,586 Marks, a decrease of 2,960 Marks.

**CONSOLIDATED TELEPHONE CONSTRUCTION AND MAINTENANCE COMPANY, LIMITED.** Telephone and Electrical Works, 109, Farringdon-road, E.C. Capital, £224,850. Directors: Sir James Vogel, K.C.M.G., Chairman. Col. C. Deputy-Chairman, Sir Alexander Armstrong, K.C.B., J.L.D. &c., The Hon. J. Spensley, John P. Bigelow, Esq., P. Carnegie, Esq., C.I.F., Charles Carter, Esq., &c. The Company has been established for the manufacture and sale of Telephones on Edison-Bell, Gray-Bell, and other patents, and for the manufacture and sale of description of articles connected with Telephones.

**CUBA SUBMARINE TELEGRAPH COMPANY, LIMITED.** 61, Old Broad-street, London, E.C. Mr. James Scott, Secretary. Directors: Joaquim de M. M. Esq., Chairman. Benvenuto, Esq., Alexander I. Low, Esq., Horatio J. Perre, Esq. The capital is £100,000, fully paid ordinary shares of £10, and £60,000 in 10 per cent. cumulative preference of £10 fully paid.



## **A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.**

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**RECT SPANISH TELEGRAPH COMPANY, LIMITED.** General Offices, Leadenhall-buildings, Leadenhall-street, London, E.C. London Station, 1, Leadenhall-street, E.C. **CHARLES GERHARDI, Esq.,** Manager. Directors—Neil Bannatyne, Esq. (Chairman), Edmund Etlinger, Esq.; Abraham Scott, Esq.; Sir James Anderson; John Denison Pender, Esq. Capital—12931 Ordinary shares (£9 paid) £116,379; 6,000 Preference shares (£10 paid) £60,000; total, £176,379. Cables—Falmouth to Bilbao, 479 knots; Marseilles to Barcelona, 220 knots; Landlines, in England, France, and Spain, 26 knots; total, 725 knots.

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**RECT UNITED STATES CABLE COMPANY, LIMITED.** **J. W. FULLER, Esq.** Secretary and Traffic Manager. Directors—John Pender, Esq., M.P. (Chairman); William Ford, Esq.; C. J. Günther, Esq.; Lord Hawke; Admiral The Hon. Sir Henry Keppel, G.C.B.; Admiral R. C. Mayne, C.B.; Charles Meara, Esq.; E. M. Underdown, Esq. Rate to New York and Canada, 2s. per word. For rates to other places, and further particulars, apply at the Company's offices. Head stations (always open) London, 34, Throgmorton-street, E.C.; Liverpool, D6, Exchange-buildings. Branch Stations in London—South Sea House (adjoining the "Baltic"), Threadneedle-street, E.C.; East India Avenue, Leadenhall-street, E.C.; The Commercial Sale Rooms, Mincing-lane, E.C.; and 52, Old Broad-street, E.C. To save time the public in London and Liverpool are recommended to hand in their Telegrams at the Company's Stations, as above, where receipts are given for the amounts charged. Telegrams for this Company's Cables handed in at the Postal Telegraph Offices, must be marked "via Direct Cable." This instruction is signalled free of charge. The name of the place, from which messages originate, is transmitted free of charge. General offices, 52, Old Broad-street, London, E.C.

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**STERN TELEGRAPH COMPANY, LIMITED.** 66, Old Broad-street, London, E.C. **SIR JAMES ANDERSON,** Managing Director; **CHARLES W. STRONGE, Esq.,** C.B., Official Director. Directors—John Pender, Esq., M.P. (Chairman); The Most Hon. the Marquis of Tweeddale (Vice-Chairman); George G. Nicol, Esq.; Lord Alfred Paget; John Denison Pender, Esq.; Lord Sackville A. Cecil. Telegrams can be sent from the Company's offices, 11, Old Broad-street, London, E.C., 8, Leadenhall-street, London, E.C., 3, Great Tower-street, London, E.C.; H5, Exchange-buildings, Liverpool; 20, Brown-street, Manchester, and from any postal station in Great Britain and Ireland. When not given in at the Company's Offices, Telegrams should be directed "via Eastern," these words being signalled by the postal authorities free of charge. Books of forms, tariffs, &c., forwarded post free on application to the Company's chief offices, 66, Old Broad-st., London, E.C. By order, George Draper, Secretary.

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**STERN EXTENSION, AUSTRALASIA AND CHINA TELEGRAPH COMPANY, LIMITED.** 66, Old Broad-street, London, E.C. Directors—John Pender, Esq., M.P. (Chairman); Sir James Anderson; Francis A. Bevan, Esq.; Charles W. Earle, Esq.; Sir Thomas Fairbairn, Bart.; The Right Hon. Viscount Monck; Sir William McArthur, K.C.M.G., M.P.; George G. Nicol, Esq.; The Most Hon. the Marquis of Tweeddale.

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**STERN AND SOUTH AFRICAN TELEGRAPH COMPANY, LIMITED.** 66, Old Broad-street, London, E.C. **SIR JAMES ANDERSON,** Managing Director; **CHARLES W. STRONGE, Esq.,** C.B., Official Director. Directors—John Pender, Esq., M.P. (Chairman); Sir Daniel Gooch, Bart, M.P.; Admiral Sir Leopold G. Heath, K.C.B.; James Pender, Esq.

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**EDISON-GOWER-BELL TELEPHONE COMPANY OF EUROPE, LIMITED.** Office, 34, Walbrook, London, E.C. Capital, £365,000, in fully paid Shares of £1. **R. H. KRATSE, Esq.,** Secretary. Directors—Col. Gourand (Chairman), J. F. Bailey, Sir A. Armstrong, K.C.B., Sir J. Vogel, K.C.M.G. The Company carries on exchange business in various European countries, and has the sale of telephones for abroad under the Edison and Gower-Bell patents.

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**ELECTRIC NEWS-TELEGRAPH COMPANY, LIMITED.** Chief Offices, 4, Ludgate Circus, London, E.C. Stock Exchange Offices, 4, Warnford-court, London, E.C. **JOHN COOPER,** Secretary. **WILLIAM J. BURNSIDE, Esq.,** Managing Director. Directors—Sir Michael Kennedy, K.C.S.I. (Chairman), M. Lloyd, Q.C., M.P. The authorised capital is £150,000, in shares of £5, and £39,025 has been issued and paid up in full.

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**EXCHANGE TELEGRAPH COMPANY, LIMITED.** Offices, 17 & 18, Cornhill, London, E.C. Capital, £213,000. **W. H. DAVIES,** Managing Director. Directors—C. H. Ashley, J. H. Hutchinson, H. L. Hotchkiss, H. Burt, C. S. Seyton. The capital consists of £60,000 in A. shares of £10, with £7 per share called up, and £153,000 in fully paid B shares of £10. The accounts are made up annually to June 30th.

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## J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

**GERMAN UNION TELEGRAPH COMPANY.** London agency, 66, Old Broad-street, E.C. Reserve fund, 228,112 marks. Renewal fund, 281,638 marks. Carried forward, 1,689 marks. This company was established in Berlin in May, 1871, to carry out a contract from the Prussian Government for a term of 25 years from March 12th, 1869.

**GERMAN UNION TELEGRAPH AND TRUST COMPANY, LIMITED.** Offices, 66, Old Broad-street, London, E.C. Capital, £200,500. W. PAYTON, Esq., Secretary. Directors—Sir J. Anderson, J. D. Pender, Count O. Von Reichenbach, H. G. Erichsen. The accounts are made up annually to December 31st, and submitted in April. The Company is quoted in the official list.

**GLOBE TELEGRAPH AND TRUST COMPANY, LIMITED.** Offices, 66, Old Broad-street, London, E.C. W. PAYTON, Esq., Secretary. Directors—J. Pender, M.P. (Chairman), W. Ford, H. D. Gooch, Sir J. Anderson, Sir D. Gooch, Bart., M.P., Marquis of Tweeddale. The Capital consists of £1,713,370, 6 per cent. preference shares, and £1,713,370 ordinary shares, both of £10, and fully paid.

**GREAT NORTHERN TELEGRAPH COMPANY OF COPENHAGEN.** Head Office, 28, Kongens Nytorv, Copenhagen, K. Captain E. SIESEN, R.D.N., Managing Director, London Office, 119, Bishopsgate-street Within, London, E.C., F. C. C. NIELSEN, Manager, H. G. C. Bohr, J. Henningsen, general agents in China and Japan. Offices, Bund Shanghai, H. G. Erichsen, The Company's Representative in England. Directors—C. Tietgen (Chairman), C. A. Broberg, L. P. Holmblad, Col. V. Hoskier, R.D.E., M. G. Melchior, J. Suk, F. C. H. E. Tobiesen.

**HAMBURG-HELGOLAND TELEGRAPH COMPANY.** London Agency, 66, Old Broad-street, E.C. The capital of this Company consists of 900 shares, to bearer, of 300 thalers, £15, each, some of which are held here. Reserve fund, 1,121 marks.

**HENLEY'S (W. T.) TELEGRAPH WORKS COMPANY, LIMITED.** Offices, Drapers' Gardens, London, E.C. G. SITTON, Esq., Secretary. Directors—H. Alcock, W. T. Henley, A. Mongredien, E. Figgess, R. J. Jenkins, F. Newton, J. D. Walker. The Capital is £60,950 in fully-called shares of £10, and there are 7 per cent mortgage debentures to amount of £15,000 with interest, payable March 1st, and September 1st.

**INDIA RUBBER, GUTTA PERCHA, AND TELEGRAPH WORKS COMPANY, LIMITED.** Office, 106, Cannon-street, London, E.C. W. J. TYLER, Esq., Secretary. M. GRAY, Manager. Directors—G. Henderson (Chairman), A. Bettie, M.D., N. Bannatyne, S. W. Silver. The capital is £312,000, in fully paid shares of £10, and there are 6 per cent mortgage debentures to the amount of £100,000, and loans amounting to £57,320.

**INDO-EUROPEAN TELEGRAPH COMPANY, LIMITED.** 18, Old Broad-street, London, E.C. F. MOLL, Esq., Accountant and Secretary. W. ANDREWS, Esq., Managing Director. Official Directors—Herr Bude, Director-General of Telegraphs of the German Empire, General Von Lachner (Director-General of Imperial Telegraphs in Russia), H. Weaver, Esq. Directors—Colonel James Holland (Chairman), The Park, Upper Norwood. A. Delbruck, Esq., Berlin. C. W. Earle, Esq., Bryanstone-square, John Brenberg Gossler, Esq., Hamburg. H. H. Meier, Esq., Bremen. Major-General G. B. Tranchesi, R.E., Spring Grove, Isleworth. J. Herbert Tritton, Esq., 54, Lombard-street, E.C., H. Weaver, Esq., 26, Old Broad-street, E.C. Consulting Member—C. W. Siemens, Esq., F.R.S., D.C.L., 12, Queen Anne's-gate, Westminster, S.W.

**LANCASHIRE AND CHESHIRE TELEPHONIC EXCHANGE COMPANY, LIMITED.** Office, 38, Faulkner-street, Manchester. Capital £296,161 in fully paid shares of £1. K. MacIVER, Esq., Secretary and General Manager. Directors—C. Moseley (Chairman), E. Heyworth (Deputy-Chairman), C. S. Agnew, J. B. Morgan, J. Thompson, G. H. Robertson.

**LONDON AND GLOBE TELEPHONE AND MAINTENANCE COMPANY, LIMITED.** Offices, 31, Queen Victoria-street, London, E.C. Capital £600,000. JAMES FORD, Esq., Secretary. Léon Soulemin, Esq., 12, Rue St. Anne, Paris, Continental Director. Board of Directors—Stewart Pixley, Esq., Chairman, F. Formby Back, Esq., Robert Ewing, Esq., John Glas Sanderman, Esq., J. T. F. Otway, Esq., Consulting Electricians—Professor Silvanus P. Thompson, B.A., D.S., F.R.A.S., Alexander Muirhead, Esq., D.S., F.C.S.; Electricians—Geo. L. Anders, Esq., J. B. Henck, Jun.



## **BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.**

### **LONDON, PLATINO-BRAZILIAN TELEGRAPH COMPANY, LIMITED.**

Offices 66, Old Broad-street, London, E.C. W. PAYTON, Esq., Secretary. Directors—J. Pender (Chairman), J. Hollocombe, and F. Pavy. Capital, £383,480, in fully paid shares of £10. There is also £100,000 in 7 per cent debentures of £100 with coupons attached, payable the 1st of March and September, and redeemable March, 1884.

### **INTEVIDEAN AND BRAZILIAN TELEGRAPH COMPANY LIMITED.**

Offices 2, Tokenhouse-buildings, London, E.C. Capital £89,140 in fully paid shares of £10, £13,380 debentures. J. FRASER, Secretary. Directors—Sir T. G. Browne, K.C.M.G., C.B., (Chairman), C. Cameron, M.P., Lieut.-Col. G. W. Macauley.

### **NATIONAL TELEPHONE COMPANY, LIMITED.** Office: 11, Queen Victoria

Street, London, E.C. The capital consists of £450,000 fully paid ordinary shares of £5, and £150,000 in 6 per cent cumulative preference shares of £10, of which 2,780 shares are fully paid, and 12,220 have £6 paid. W. B. CAMPBELL, Esq., Secretary. Directors—Col. R. R. Jackson (Chairman), J. P. Bigelow, Vice-Chairman, Hon. G. G. Hubbard, J. Bruce, W. Lawson, S. D. Williams, P. Garnett, T. A. Dickson, M.P., J. Garnett, W. A. Smith, W. H. Bradbury, S. H. Sands, J. F. Harrison, J. H. Agnew and J. B. Morgan.

### **NATIONAL TELEPHONE COMPANY, LIMITED, MIDLAND DISTRICT.**

Offices, Wellington Chambers, 40, Bennett's-hill, Birmingham. W. L. Bishop, District Manager, 40, Bennett's-hill, Birmingham. F. Brown, Walsall, Wednesbury, and Wolverhampton Manager. The Bridge Walsall Local Board S. D. Williams, Woodgate, Malvern (Chairman), Herbert Chamberlain, Vicarage-road, Edgbaston, Birmingham (Vice-Chairman), Henry Lea, M.I.C.E. 34, Bennett's-hill, Birmingham. E. G. Capon, Union Passage, Birmingham, and Lifford Mills, King's Norton. E. B. Marten, C.E., Stourbridge, Professor J. H. Poynting, M.A., Mason Science College, Birmingham.

### **NORTHERN DISTRICT TELEPHONE COMPANY, LIMITED.** Offices, Exchange

Buildings, Quay Side, Newcastle-upon-Tyne, and Arcade Chambers, Sunderland. Capital, £100,000. T. A. SIMPSON, Secretary. WILLIAM EDWIN IRISH, Manager; The National Provincial Bank of England, Limited, and Branches, Bankers. R. Routledge, Frederick Lodge, Sunderland, Solicitor; Messrs. Billett & Blackie, 5, Copthall Buildings, London, Messrs. W. H. Challoner & Co., Sunderland, Brokers, B. Smyrke, Chartered Accountant, John-street, Sunderland, Robert S. Blease, 25, Castle-street, Liverpool, Auditors. Directors—Charles Holloway Reed, J.P., iron manufacturer, Sunderland (Chairman), William Henry Dixon, shipowner, Sunderland (Vice-Chairman), Samuel Alcock, Solicitor, Sunderland, James Henry Wood Culliford, shipowner, Sunderland and London, Ralph Milbanke Hudson, jun., shipowner, Sunderland, Joseph Bond Morgan, Managing Director of United Telephone Company, 36, Coleman-street, London, E.C. (nominated by The United Telephone Company, Limited, under Agreement), Thomas Wilson, shipowner, Sunderland. Under Licence from The United Telephone Company, Limited, who are sole proprietors of the Master Patents covering the Bell, Edison, Crossley, Gower-Bell, and other patents for the United Kingdom. Registered under the Companies' Acts, 1862 to 1880.

### **NATIONAL TELEPHONE COMPANY, LIMITED.** Offices, 3, Great Winchester-

street, London, E.C. Nominal Capital (£1 shares) £300,000, Subscribed Capital £297,990, Paid up Capital £187,990. W. G. HALL, Esq., Secretary. Directors—Jno. Pender, Esq., M.P. (Chairman), Colonel Gouraud (Vice-Chairman), Sir Julius Vogel, K.C.M.G., Sir Alexander Armstrong, K.C.B., &c., Patrick Carnegie, Esq., C.I.E., John P. Bigelow, Esq., W. W. Cargill, Esq., Professor T. A. Edison, James Pender, Esq., Hon. G. G. Hubbard.

### **REUTER'S TELEGRAM COMPANY, LIMITED.** London Offices, 24, Old Jewry,

E.C. Directors—Colonel James Holland (Chairman), Admiral the Right Hon. Sir C. D. Hay, Bart., M.P., Baron de Reuter, Janus Sydney Stopford, Esq., Herbert de Reuter, Esq. (Managing Director). The Company was established in 1865. The capital is £72,000 in fully paid up shares of £8. The accounts are made up annually to December 31st., and submitted in April.

### **RIVER PLATE TELEPHONE AND ELECTRIC LIGHT COMPANY, LIMITED.**

Registered Offices, 34, Walbrook, E.C. Capital, £100,000 in £5 shares (£80,000 9% Preferred and £20,000 Deferred). Directors—Colonel G. E. Gouraud (Chairman), Sir Julius Vogel, K.C.M.G., Patrick Carnegie, Esq., C.I.E., Hon. Howard Spensley, Sir Alex. Armstrong, K.C.B., Edward Lanrel Powers, Esq. (Managing Director in the River Plate). Local Board in Buenos Ayres and Monte Video—Charles H. Sanford, Esq. (Messrs. Samuel B. Hale and Co.), Buenos Ayres, Señor Don Francisco Seeber, Señor Don Carlos Sagnier.

**SIEMENS BROTHERS AND COMPANY, LIMITED.** Office, 12, Queen's Gate, London, S.W. The subscribed capital is £500,000 in shares of £100, of which £100 or £75 per share is paid up. A. SABINE, Secretary. Directors—Dr. W. Siemens of Berlin (Chairman); C. H. Siemens and L. Loeffler (Managing Directors). The accounts are sent annually to December 31st, and submitted in April.

**SPANISH NATIONAL SUBMARINE TELEGRAPH COMPANY, LIMITED.** Office, 106, Cannon Street, London, E.C. Share capital £500,000 in £10 shares. Debt £140,000. WILLIAM J. TYLER, Secretary. Directors—Count Thadée d'Oskan, J. Owen Lewis, Francis Anderson, George Henderson, Stephen Wm Silver, Matthew Cables, &c.: From Cadiz to Teneriffe, Grand Canary, Lanzarote, and La Palma, and Teneriffe to St. Louis, Senegal.

**STANDARD TIME AND TELEPHONE COMPANY, LIMITED.** 19, and 21, Queen Victoria-street, London, E.C. Capital, £100,000. EDGAR RAY, Secretary. JOHN LUND, M.S.T.E., Managing Director. LATIMER CLARKE, Esq., M.I.C.E., Consulting Engineer. Directors—Hon. Howard Spensley (Chairman), Frederick William Manson. The Standard Time and Telephone Company design and construct Time Balls, Time Flashing and other Signals for Government, Observatory, Railroad and private Time Service. They are the sole owners of Barraud and Lund's patents, which can be applied at a small expense to any clocks now in use, and which form the basis of the completely successful system of Synchronized Clocks. They will receive proposals for the sale of the rights or manufacture the patents controlled by them in Provincial Towns and elsewhere, and for the extension of their existing Greenwich Mean Time system in London, either for time signals, or for synchronizing existing clocks, being a Time Service by Electric Clocks worked under contract with Her Majesty's Postal Telegraph Department. They are also prepared to sell or hire Royalty paid loud-speaking Gower-Bell Telephones, and to erect and maintain the needful telegraph lines in connection therewith. Descriptive circulars sent on application to The Standard Time and Telephone Company, Limited, 19 and 21, Victoria-street, London, E.C.

**SUBMARINE CABLES TRUST.** Offices, 66, Old Broad-street, London, E.C. Capital £420,000. LEWIS WELLS, Esq., Secretary. Trustees—Sir James Anderson, Sir J. Gooch, Bart., M.P., The Right Hon. Viscount Monck, John Pender, Esq., M.P., The Hon. The Marquis of Tweeddale.

**SUBMARINE TELEGRAPH COMPANY, LIMITED,** between Great Britain and the Continent of Europe. Offices, 2, Throgmorton Avenue, London, E.C. Capital £200,000. Directors—Sir Julian Goldsmid, Bart. (Chairman), The Rt. Hon. Robert Bourke, M.P., Brand, Esq., M.P., The Hon. Ashley Ponsonby, Hon. E. C. Leigh, Q.C.

**TELEGRAPH CONSTRUCTION AND MAINTENANCE COMPANY, LIMITED.** Offices, 38, Old Broad Street, London, E.C. Capital, £448,200. E. DICKENS, Esq., Secretary. Directors—Sir J. Gooch, Bart., M.P. (Chairman), Sir T. Fairbairn, Bart., P. Rawson, Esq., Campbell, Sir G. Elliott, Bart., M.P., Lord A. Paget, Vice-Admiral Sir G. H. Richardson, and W. SHUTE (Manager). The company was formed in 1864 to take over the telegraph manufacturing business of Messrs. Glass, Elliott and Co., and of the Gutta Serena Company.

**TELEPHONE COMPANY OF AUSTRIA.** Registered office, 34, Wall Street, London, E.C. Capital £100,000 in shares of £5 each. Directors—Colonel G. E. G. Hon. Howard Spensley, Sir Julius Vogel, K.C.M.G.

**TELEPHONE COMPANY OF EGYPT, LIMITED.** Société anonyme des Téléphones d'Égypte, 3, Great Winchester Street, London, E.C. Capital £100,000 in 20,000 shares of £5 each. W. G. HALL, Esq., Secretary. Directors—Lieut.-Gen. A. Fraser, C.B. (Chairman), James Pender, Esq., Col. G. E. G. (General). Object—To develop and carry on the telephone industry in Egypt. Development. Exchanges have been established in Cairo and Alexandria. Also a large number of private lines have been erected in the same places.



## BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

**TELEPHONE COMPANY OF IRELAND, LIMITED**, under Licence from the United Telephone Company, Limited. Registered under the Companies' Acts, 1862 to 1880. Head Office, Commercial Buildings, Dame Street, Dublin. London Office, The United Telephone Company, Limited, 36 Coleman Street, E.C. Capital £250,000, divided into 75,000 preference shares of £1 each, and 175,000 ordinary shares of £1 each. JAMES F. BUTTERWORTH, Secretary. The National Bank, Limited, Old Broad Street, London, E.C., and College Green, Dublin, Bankers. Messrs V. B. Dillon & Co., 7, Rutland Square, Dublin, Solicitors. Messrs. Keavans and Keen, Dame Street, Dublin, and Robert Bleasdale, Esq., Fenwick Street, Liverpool, Auditors. Directors: E. Dwyer Gray, Esq., M.P., Pembroke House, Dublin, Chairman; John Bailey, Esq., 4, Clifton Terrace, Monkstown, Co. Dublin; Arthur Dudgeon, Esq., 32, Merrion Square, North, Dublin; Hermann G. Erichsen, Esq., 119, Bishopsgate Street Within, London, E.C.; James Winstanley, Esq., Dromartin House, Dundrum, Co. Dublin; Joseph Bond Morgan, Esq., 56, Coleman Street, London, E.C. Representative of the United Telephone Company. This company was formed in the year 1882 under an agreement with the United Telephone Company, Limited, whereby this company acquired the licence for the introduction and application of telephones, for the working of telephonic exchanges in Ireland (excluding the province of Ulster), and for the working, letting on hire, and selling telephones, and all other work incidental or conducive to the development of telephonic communication. An Exchange having over 500 subscribers is now in operation in Dublin, yielding already, although the company has been but little over twelve months in existence, a gross revenue at the rate of about £6,000 per annum, and the number of subscribers is increasing each week. In addition to the revenue from the exchange, a large income is derivable from subscriptions for private wires, the income from which already exceeds £1,000 per annum, and is expected to increase very greatly.

**UNITED TELEPHONE COMPANY, LIMITED.** T. BLAIRIE, Secretary; JOSEPH B. MORGAN, Esq., Managing Director. Directors—James Brand, Esq. (Chairman), James Stuart Forbes, Esq. (Deputy Chairman), John Henry Agnew, Esq., John W. Batten, Esq., Col. Gommard, Diliwyn Parrish, Esq., W. Cuthbert Quilter, Esq. The Share Capital is £500,000 in £5 shares, 80,000 of which are fully paid shares, and 20,000 part paid shares. 20,000 new shares issued at £2 premium, upon which there has been called up £2 account capital, £1 account premium, still remaining uncalled, £3 account capital, £1 account premium.

**EAST COAST OF AMERICA TELEGRAPH COMPANY, LIMITED.** Office, 98, Cannon-street, London, E.C. F. L. Robinson, Secretary. Directors—R. Kendal, Esq. (Chairman), M. Gray, Esq., W. E. MacAndrew, Esq., P. F. Campbell, Esq. The Capital is £300,000 ordinary shares of £10 fully-paid, and £150,000 8% debentures of £100, with coupons payable June 30th, and December 31st. The cables and land lines, 1,717 nautical miles, extend from Valparaiso (Chile) to Lima (Peru), touching at Serena and Caldera (Chile), Antofagasta (Bolivia), Iquique, Arica, and Mollendo (Peru), connecting with the cables and landlines of the Central South American Telegraph Company, and the Mexican Telegraph Company, between Lima and Galveston (United States). Messages by this route must be marked "via Galveston."

**EAST INDIA AND PANAMA TELEGRAPH COMPANY, LIMITED.** Offices: Dashwood House, 9, New Broad-street, London, E.C. Incorporated 9th January, 1877. Mr. R. T. Brown, Secretary, Sir SAMUEL CANNING, 3, Great Winchester-street-buildings, E.C., Engineer, Directors—C. W. Earle, Esq. (Chairman), Sir James Anderson, William Andrews, Esq., Cyrus W. Field, Esq. (Nominee of the International Ocean Telegraph Company), William Ford, Esq., Henry Holmes, Esq., Henry Weaver, Esq., Solicitors, Messrs. Bircham & Co., 26, Austin Friars, E.C.

**EASTERN AND BRAZILIAN TELEGRAPH COMPANY, LIMITED,** 19, Great Winchester-street, London, E.C. Capital, 45,756 ordinary shares, of £15 each, £686,340; 24,154 preferred ordinary shares, of £7 10s each (5% annuities), £181,155; 24,154 deferred ordinary shares, of £7 10s each, £181,155, total £1,048,650. Debentures, 6 2,000 "A" debentures, of £100 each, £200,000; 62 2,500 "B" debentures, of £100 each, £250,000, total £450,000. R. M. CUNNINGHAM, Secretary, Major Wood, Managing Director, Directors—Sir Henry Drummond Wolff, G.C.M.G., K.C.B., M.P. (Chairman), W. S. Andrews, Esq., C. W. Earle, Esq., D. H. Goodsall, Esq., and H. Weaver, Esq.

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WITH

**NAMES OF DIRECTORS,**

**PARTICULARS OF CAPITAL, &c.**

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# LIST OF ELECTRIC LIGHT COMPANIES

WITH

NAMES OF DIRECTORS, PARTICULARS OF CAPITAL,

**ANGLO-AMERICAN BRUSH ELECTRIC LIGHT CORPORATION, LIMITED**  
 Offices, Belvedere-road, Lambeth, London, S.E. Works, Vine-street, York-road, E.S.E., Mansfield-street, Borough-road, London, S.E., Portpool-lane, Gray's Inn-road, W.C. Capital £800,000 13,701 £10 shares fully paid up, 1137,910 26,935 £8 shares £215 932 Total, 1,453,002. **EMILE GARCKE, Esq.**, Secretary. **FRANK WYNNE**, General Manager. Directors—The Right Hon. Lord Thurlow, Chairman, J. S. Seligman & Co., Vice-Chairman, W. Laid, Esq., F.R.S., E. Wood, V.-P. Inst. C.E., Colonel Frederick G. Stuart, John Irving Courtenay, Esq., Hon. Gibbs, Esq. of Messrs. Antony Gibbs & Sons. Chief Electrician, R. Percy Nelson. Telegraphic address, "Magneto," London.

**ANGLO-SPANISH "BRUSH" ELECTRIC LIGHT AND POWER COMPANY, LIMITED** (Brush system of Electric Lighting and Lane-Fox Incandescent Lamp). 110, Cannon-street, London, E.C. Capital £44,545 in £5 shares. J. N. Goss, Sec. Directors—Edmund Etlinger, Esq., Director of the Direct Spanish Telegraph Co. Limited, Rear-Admiral Brooker, C.B., 67, Endley-crescent, South Kensington, S.W., Kincaid, Esq., M. Inst. C.E., 11, Great George-street, Westminster, S.W. Madrid Committee—His Excellency Señor Don José Echegaray, Ex-Minister of Finance. His Ex. Señor Don Luis de Rute, Sub-Secretary of the Home Department. Captain C. Spalding, 9, Ferniz, Madrid. Bankers—Messrs. Brown, Janson & Co. 62, King W. street, London, E.C. Solicitors—Messrs. Walter Webb & Co., 25, Queen V. street, E.C. Auditors—Messrs. Price, Waterhouse & Co., 11, Gresham-street, E.C. Company is formed to carry on in the kingdom of Spain and in its important colonies Cuba, Porto Rico, and the Philippines the business of supplying and installing its lamps supply Electricity for the purposes of Electric Lighting, Motive Power, Chemical Decomposition and other applications for which it is suitable.

**AUSTRALASIAN ELECTRIC LIGHT, POWER AND STORAGE COMPANY, LIMITED** Offices, 41, Coleman-street London, E.C. Capital £150,000. J. H. Dwyer, Secretary. Directors—R. C. Want (Chairman), L. Clark, J. J. Cater, P. Falk, Lieut.-Col. H. M. Hamilton, C.B.

**BRITISH ELECTRIC LIGHT COMPANY, LIMITED** Capital, £72,210. 1 and Works, Turk's Head-yard, Finsbury-street, London, E.C. R. P. Munn, Sec. Directors—J. Hubbuck (Chairman), Edward Easton, E. R. Bright, Mayor-Corpn. Sir, Green, K.C.S.I. C.B., P. Walters. Has paid a dividend of 10 per cent. in 1880-1.

**BRITISH INSULITE COMPANY** Office, 20, Coleman-street London, Capital £118,820. M. C. GREENHILL, Secretary. Directors—Right Hon. L. P. D. Chairman, J. Drummett, E. Easton, C.B., Dr. J. A. Fleming, M. M. Moore, Sir Rickards.

**BRUSH MIDLAND ELECTRIC LIGHT AND POWER COMPANY, LIMITED** Offices—4, Great Winchester Street Buildings, London, E.C. Capital £112,175. H. N. Secretary. Glen, Mads Currie & Co. 67, Lombard-street, London, E.C. Bankers: Field Manager—B. M. Drake Engineer and Electrician. Directors—Richard H. Glynn, 88, London-wall E.C. Director of the Bank of British North America. Henry Russell Esq., J.P., Newport, Monmouthshire. John Pellys Gillett Esq., Barrow, Cumbria, the Hon. Fulke Greville, Brooks's Club London W. James Penner Esq., Rushmore, Wiltshire. Augustus Bazzard Esq., Concessionaries for the Brush System in Cheshire, Nottinghamshire, Shropshire, Staffordshire, Warwickshire, Wiltshire, Dorsetshire, Devonshire, Lancashire, Oxfordshire, Northamptonshire, Leicestershire, Berkshire and Angleshire.



## **A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.**

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**STERN ELECTRIC LIGHT AND POWER COMPANY, LIMITED.** Offices, 19, Great Winchester Street, London, E.C. Walter Jackson, Secretary. Directors—Ernest Noel, Esq., M.P. (Chairman), General H. D. Abbott, C.B., Latimer Clark, Esq., Alexander McArthur, Esq., M.P., James Pender, Esq., Major C. H. Strutt (Managing Director).

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**ANSON AND SWAN UNITED ELECTRIC LIGHT COMPANY, LIMITED.** 74, Coleman-street, London, E.C. Capital, £1,000,000, divided into 150,000 A shares of £5 each, and 50,000 B shares of £5 each. Major S. FLOOD-PAGE, Secretary. Directors—James Staat Forbes, Esq. (Chairman), Viscount Anson (Deputy Chairman), E. W. Batt, Esq., Shelford Bidwell, Esq., F. R. Leyland, Esq., Major-General J. S. Trevor, Captain E. Villiers, Arnold H. White, Esq.

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**ANSON'S INDIAN AND COLONIAL ELECTRIC COMPANY, LIMITED.** Offices, 4 and 6, Throgmorton-avenue, London, E.C. Capital, £250,000. J. F. TAPPE, Esq., Secretary; Major S. FLOOD PAGE, General Manager. Directors—Marquis of Tweeddale (Chairman), H. Schlesinger, Sir G. Warrender, Bart., Hon. W. St. J. F. Brodrick, M.P., Colonel the Hon. W. Le P. Trench, V. N. B. Barrington-Kennett.

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**ELECTRIC SUN LAMP AND POWER COMPANY, LIMITED.** Offices, St. Margaret's-chambers, Victoria-street, London, S.W. Capital, £38,795 in ordinary shares of £5; 50,000 in fully-paid deferred shares of £5. J. REEVE, Esq., Secretary. Directors—Lord Brabourne (Chairman), R. Milburn, G. C. T. Bartley, E. Gilman.

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**ELECTRICAL INSULATOR MANUFACTURING COMPANY, LIMITED.** Offices, 31, Lombard-street, London, E.C. Capital £100,000 in shares of £1. E. H. WILSON, Esq., Secretary. Directors—J. I. Minchin (Chairman), A. R. Robinson, W. J. Lamb, J. B. Foote.

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**ELECTRICAL POWER STORAGE COMPANY, LIMITED.** Offices, 4, Great Winchester-street, London, E.C. Capital £529,800 in 264,900 shares of £2 each, fully paid. H. DELL, Secretary; T. M. COLLETT, General Manager. Directors—Sir Daniel Cooper, Bart., K.C.M.G. (Chairman), John Scudamore Sellon (Vice-Chairman), John Irving Courtenay, Frederick Green, William Ladd, Colonel F. G. Steuart, Ernest Volckmar. The accumulators or secondary batteries supplied by this Company are constructed under the Faure-Sellon-Volckmar Patents. The price charged is at the rate of £3 12s. per E.H.P. hour.

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**FAURE ELECTRIC ACCUMULATOR COMPANY, LIMITED.** Offices, 71, Queen-street, Queen Victoria-street, London, E.C. Capital £1,000,000. H. CANNING, Esq., Secretary. Directors—B. Armieux, Baron E. L. de Maubeuge, Col. E. de Barolet, E. H. Cadiot.

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**FRENCH ELECTRICAL POWER STORAGE COMPANY, LIMITED.** Office, 71, Queen-street, London, E.C. H. GISLAIN, C.E., Secretary. Directors—Van der Elst, Paris, Baron C. L. de Maubeuge, Paris, S. Philippart, Paris. Capital £75,000 in ordinary shares of £1; £1,000,000 in 6% cumulative preference shares of £10, redeemable at £20 per share in 30 years from the date of issue by annual drawings. The preference dividend is guaranteed by the Faure Company.

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**FRENCH METROPOLITAN GENERAL ELECTRIC COMPANY, LIMITED,** Office, 71, Queen-street, London, E.C. Capital £1,200,000 in shares of £10. H. GISLAIN, Secretary. Directors—E. H. Cadiot, B. Armieux, S. Philippart.

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**GÉRARD AND COMPANY, LIMITED,** Electric Light Engineers and Contractors, 11, Queen Victoria-street, London, E.C. Capital, 3,000 £10 ordinary shares, £30,000; 1,000 £10 preference shares, £10,000; total, £40,000. Directors—Col. R. R. Jackson (Chairman), Wm. Alex. Smith, T. Faithful Bigg, J. G. Lorrain, John Bruce, Jean M. A. Gérard, Lescuyer, G. Nussbaum. W. J. MONFRIES, Secretary. Patentees of dynamos, arc lamps, incandescent lamps, &c.

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**GREAT WESTERN ELECTRIC LIGHT AND POWER COMPANY, LIMITED,** for the Counties of Gloucester, Somerset, Dorset, Wilts, Monmouth, Glamorgan, Pembroke, Carmarthen, Radnor, Brecon and Hereford. Office, 4, Great Winchester-street-buildings, London, E.C. Capital £120,295 in shares of £5. ALEXANDER SMITH, Secretary. Consulting Electrician—P. Jolin. Directors—C. Bell, J. B. Braithwaite, F. W. Reynolds, C. H. Stewart.

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## J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER

**GÜLCHER ELECTRIC LIGHT AND POWER COMPANY, LIMITED.**  
Coleman-street, Bank, London, E.C. Works, Batterssea Foundry, S.W. Capital £100,000.  
RUSSELL DAY, Esq., Secretary. F. GILMAN, General Manager. Directors—W. J. F.R.S. (Chairman), D. De Castro, Major J. W. M. Cotton, M. Cornell, D. Johnson, Jank, W. Wallace.

**HAMMOND ELECTRIC LIGHT AND POWER SUPPLY COMPANY, LIMITED.**  
110, Cannon-street, London, E.C. Branch Offices—Leeds, Manchester, Middlesbrough, Glasgow. Capital £250,000. PHILIP A. LATHAM, Secretary. Directors—Sir Lawrence Young, Bart., Hon. Sidney Carr Glyn, M.P., Rhodes Cobb, Robert M. (Managing), Francis Ince, Walter Low.

**HASTINGS AND ST. LEONARD'S-ON-SEA ELECTRIC LIGHT COMPANY, LIMITED.** Office, 63, Cambridge-road, Hastings. Capital, £8,500 in fully paid shares of £10. P. A. LANGHAM, Secretary. Directors—H. M. Baker (Chairman), J. Catt, G. C. F. Noakes, J. Reeves, W. L. Vernon, J. Woodhams.

**HENLEY'S (W. T.) ELECTRIC LIGHT AND POWER COMPANY, LIMITED.** Office, 8, Drapers'-gardens, London, E.C. The authorised capital is £100,000 in shares of £10. Directors—C. K. Dyer, F. A. Fane, R. Hewitt and F. Newton.

**INDIAN AND ORIENTAL ELECTRICAL STORAGE AND WORKS COMPANY, LIMITED.** Offices, 19, Great Winchester-street, London, E.C. Capital, £150,000 in shares of £5. H. C. HAYWOOD, Esq., Secretary. Directors—E. Noel, M.P. (Chairman), F. G. Stewart, J. S. Trotter, W. M. Bullivant, A. McArthur, M.P., Major C. H. Stewart. Company is quoted in the official list.

**INSULITE COMPANY, LIMITED.** Offices, 50, Parliament-street, London, E.C. Capital, £20,000. F. SANDERS, Secretary. Directors—E. Easton (Chairman), E. P. Bouverie, A. H. Huth, M. M. Moore, F. Walters, A. White.

**INTERNATIONAL ELECTRIC COMPANY, LIMITED.** London Office, 4, Colindale Avenue, buildings, E.C. Vienna office, 1 Karntnerstrasse, 43. Vienna works, Summergasse, 1. FRANK SCHLOESSER, Secretary. Directors—Sir W. H. Stephenson, K.C.B. (Chairman), Baden Powell, C. de Kierzkowski-Stewart, St. G. Lane-Fox, and Hon. A. G. Authorised Capital is £500,000 in shares of £5, and £132,000 has been issued.

**JABLOCHKOFF ELECTRIC LIGHT AND POWER COMPANY, LIMITED.** Offices, 1, Great Winchester-street, E.C. F. R. REEVES, Esq., Secretary. Directors—Sir W. Wilson (Chairman), C. J. Taylor, Sir J. N. McKenna, M.P., J. H. Evans, A. R. M. T. Lawrence, H. E. Rodwell, W. Myers. Capital, £194,805 in fully paid shares of £5, and also 7 per cent debentures amounting to £25,000.

**LANCASHIRE MAXIM-WESTON ELECTRIC COMPANY, LIMITED.** 56, New Broad-street, London, E.C. Capital, £25,000. T. R. COMYNS, Secretary. Directors—Earl de la Warr (Chairman), Admiral Sir E. A. Inglefield, C.B., J. Roberts, F. White.

**MAXIM-WESTON ELECTRIC COMPANY, LIMITED.** Offices, 47, Colindale Avenue, street, London, E.C. Works, Bankside, E.C. Capital, £500,000, paid up, £200,000. BRYAN, Esq., Secretary. Directors—Samuel Gray, Esq. (Chairman), Louis Swaby, Esq., Brown, Esq., Hugh Watt, Esq. (Managing Director).

**METROPOLITAN BRUSH ELECTRIC LIGHT AND POWER COMPANY, LIMITED.** Offices, 110, Cannon-street, London, E.C. Capital £500,000, in shares of £10. ROBERT WILSON, Esq., Secretary. J. KEETINGS-PORLOCK, Esq., Manager. Bankers—The Metropolitan Bank, Limited, 52, Threadneedle-street, London, E.C. Brokers—Woolley, Lowndes & Co., 7, Fench-lane, London, E.C. Solicitors—Messrs. Walter & 23, Queen Victoria-street, London, E.C. Auditors—Messrs. Price, Waterhouse & 4, Gresham-street, London, E.C. Directors—Sir Michael Kennedy, K.C., K.C.S.I., 66, 7, square, Baywater, London, W. Chairman, J. H. Borer, C. Tottenham, Arthur R. C. Director, Bank of Egypt, Thomas Dickson, Esq., Norwood-hill, Upper Norwood, S.E., Charles Day Rose, Esq., Bartholomew House, London, E.C., E. Easton, J. King.

**ATIONAL COMPANY FOR THE DISTRIBUTION OF ELECTRICITY BY SECONDARY GENERATORS, LIMITED.** Offices, 18, Warwick-street, Regent-street, London, W. Capital £500,000 (50,000 shares of £10 each). J. E. PICKERING, Secretary; Directors—William D'Ogley, Esq., Major J. Dixon Mackenzie, J. Dixon Gibbs, Esq., Lucien Gaulard, Esq., Maurice Le Foz, Esq.

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**RTHERN ELECTRIC LIGHT, POWER AND APPLIANCES COMPANY, LIMITED.** Offices, 104, Commercial-street, Dundee; Works, 103, Victoria-road, Dundee, A. MACKAY, Secretary; Oliver Loring, B.A., Electrician; Mackay & Mess, Chartered Accountants, Dundee; Directors—John Leng, Newspaper Proprietor (Chairman), Geo. Halley (W. Halley & Sons), Spinner, Dundee, J. M. Keiller (J. Keiller & Sons), Wholesale Confectioners, Dundee, T. Smieton (J. Smieton & Sons), Spinner, Dundee, J. M. White (J. F. White & Co.), Merchant, Dundee. Capital, £100,000 in 100,000 shares of £1 each. First issue of 10,000 shares upon which there has been paid on Allotment, 5s.; 1st Call, 2s. 6d. Telegraph Address, "Mackay Dundee."

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**ILSEN," "JOEL," AND GENERAL ELECTRIC LIGHT COMPANY, LIMITED.** Offices, St. Stephen's-chambers, Telegraph-street, London, E.C. E. T. GREGORY, Esq., Secretary. Bankers—Messrs. Barclay, Bevan, Tritton and Co., 54, Lombard-street, E.C. Solicitors—Messrs. Parker, Garrett and Parker, St. Michael's Rectory House, London, E.C. Brokers—Messrs. Ellis & Co., 2, Royal Exchange-buildings, London, E.C. Directors—Sir Rawson W. Rawson, K.C.M.G., C.B., 68, Cornwall-gardens, S.W.; Frank P. Fellows, Esq., F.S.A., F.S.S., Reform Club, S.W.; Horace W. Scriven, Esq. (Messrs. Paley, Scriven and Co.), 34, Great St. Helen's, E.C.; John Goddard, jun., Esq., Director North Metropolitan Tramways Company, Limited; Dillwyn Parrish, Esq., Director United Telephone Company, Limited; J. Fyfe, Esq., 56, Fellows-road, N.W. Capital £200,000 in £5 shares, of which £130,000 is paid up, 12,000 shares being fully paid, and 28,000 £2 10s. paid. Company registered May 15, 1882, to acquire patents for Pilsen, Joel, and Gatehouse lamps, and Schucker's dynamo for United Kingdom and colonies. Accounts are made up annually to June 30. Transfer deed common. Fee, 2s. 6d. Partly paid shares are quoted in Stock Exchange Official List.

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**OVINCIAL BRUSH ELECTRIC LIGHT AND POWER COMPANY, LIMITED.** Offices, 110, Cannon-street, London, E.C. A. JERMYN, Secretary; GEORGE OFFOR Manager. Directors—Genl. Sir M. Kennedy, R.E., K.C.S.I., F. Fesser, R. Cunningham, T. Fry, H. T. Sankey, C. Wapshare. The Company was registered May 8th, 1882, with power to issue £200,000 in shares of £5. The amount issued is £99,205 and £49,602, or £2 10s. per share is called up.

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**TH AFRICAN "BRUSH" ELECTRIC LIGHT AND POWER COMPANY, LIMITED.** Offices, 5, Copthall-buildings, London, E.C. Capital, £100,000, in 20,000 shares of £5 each. T. J. SEEL, Esq., Secretary; D. MACDONALD, Esq., C.E., Colonial Manager. Electricians at Kimberley and Cape Town—Messrs. W. W. Biddulph and W. Gammage. Bankers—Messrs. Barclay, Bevan & Co., 54, Lombard-street, E.C. In the Colony—The Bank of Africa, Limited. Directors—Lieut.-Colonel George Coxon, 55, St. Charles-square, Notting-hill, W.; Thomas Dickson, Esq., Director of the "Brush" Electric Light and Power Company of Scotland, Richmond House, South Norwood, S.E.; Porter Rhodes, Esq., 8, Harley-street, Cavendish-square, W., and Kimberley; John Williams Anderson, Esq. (of Messrs. Blaine, Macdonald & Co.), 2, Suffolk-lane, E.C.; Charles Edward Atkinson, Esq. (of Messrs. Atkinson, Smith & Blight), 11, Clement's-lane, E.C.; and Port Elizabeth.

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**TH EASTERN BRUSH ELECTRIC LIGHT AND POWER COMPANY, LIMITED.** Office, 110, Cannon-st., London, E.C. Capital £98,000. A. JERMYN, Esq., Secretary. GEO. OFFOR, Esq., Manager. Directors—General Sir M. Kennedy, R.E., K.C.S.I. (Chairman), F. Fesser (Vice-Chairman), R. Cunningham, T. Fry, H. T. Sankey, C. Wapshare.



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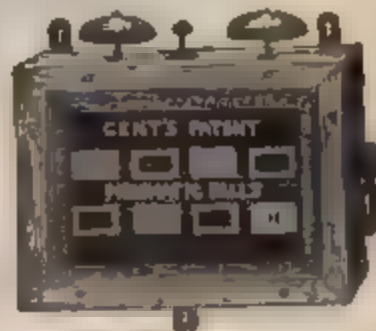
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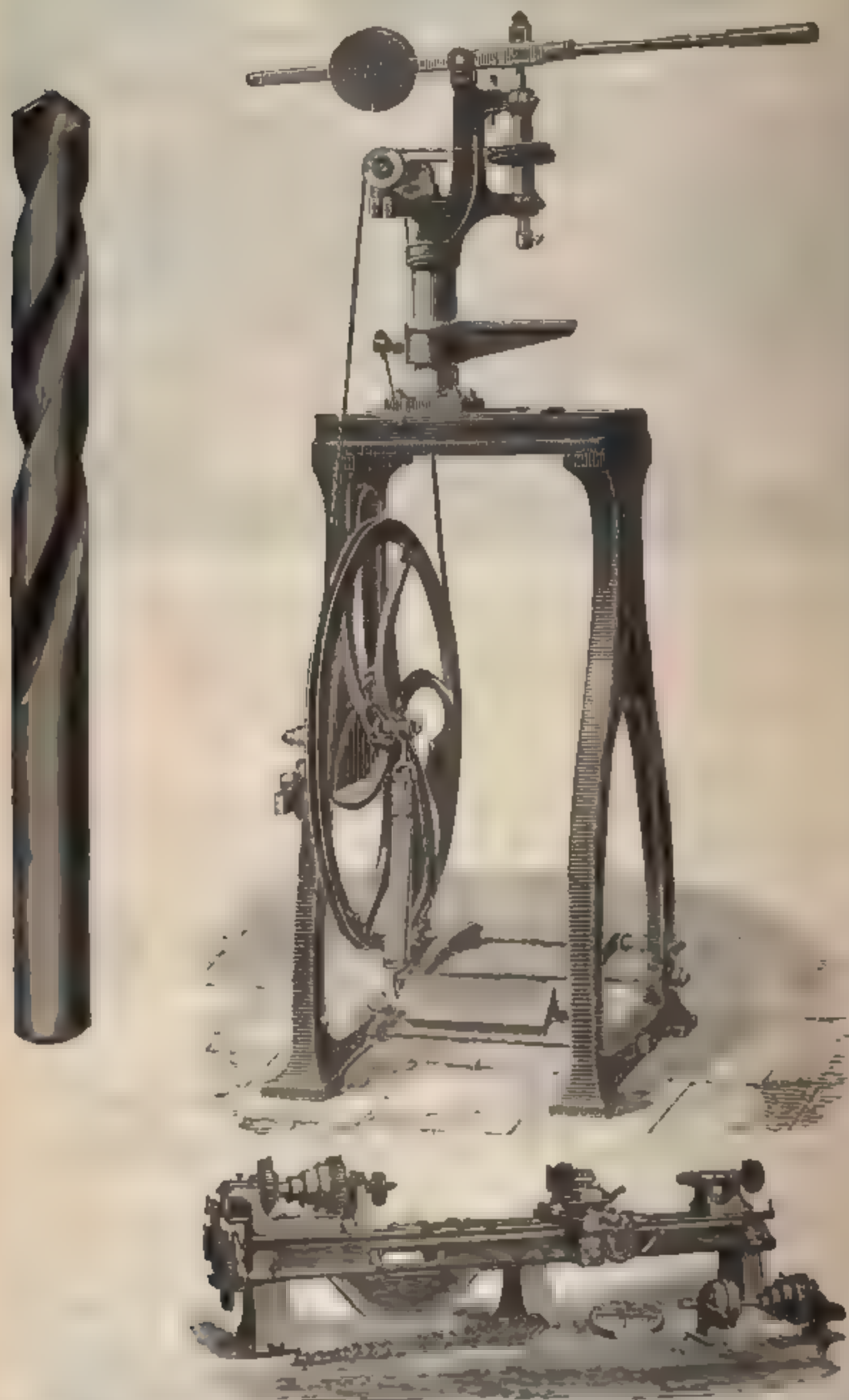
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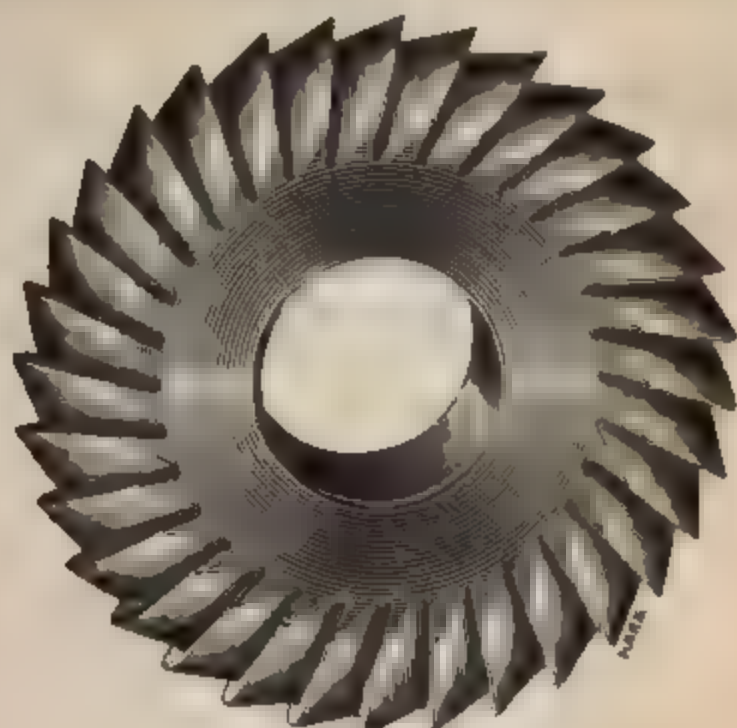
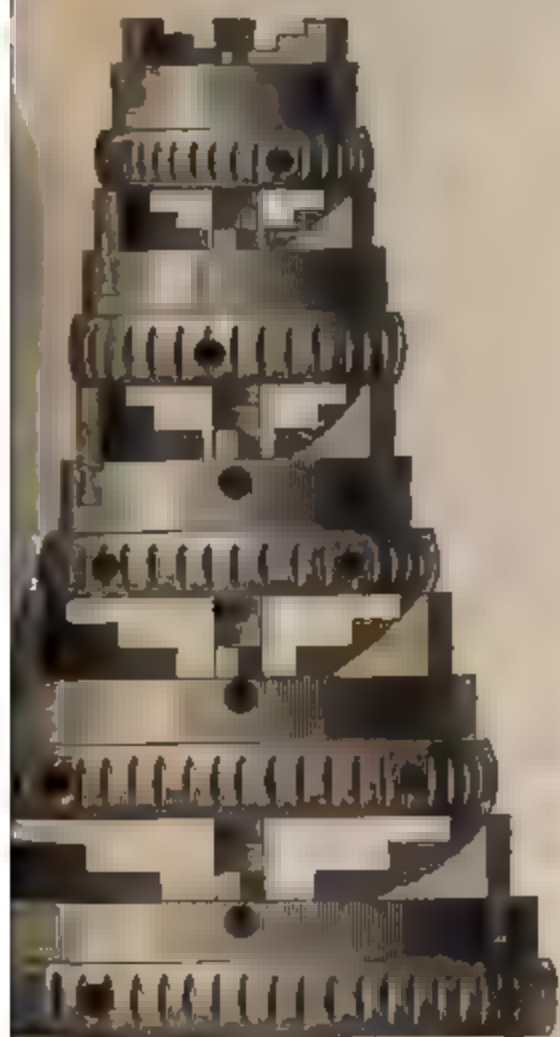


**LATHES, PUNCHING, SHEARING, SCREWING, DRILLING,  
AND PLANING MACHINES.**

**Genuine American "CLEVELAND" TWIST DRILL  
"WHITON'S" AND OTHER LATHE & DRILL CHUCKS  
TANITE SOLID EMERY WHEELS AND GRINDERS.**

*American and other Special Tools & Machinery in Great Variety*

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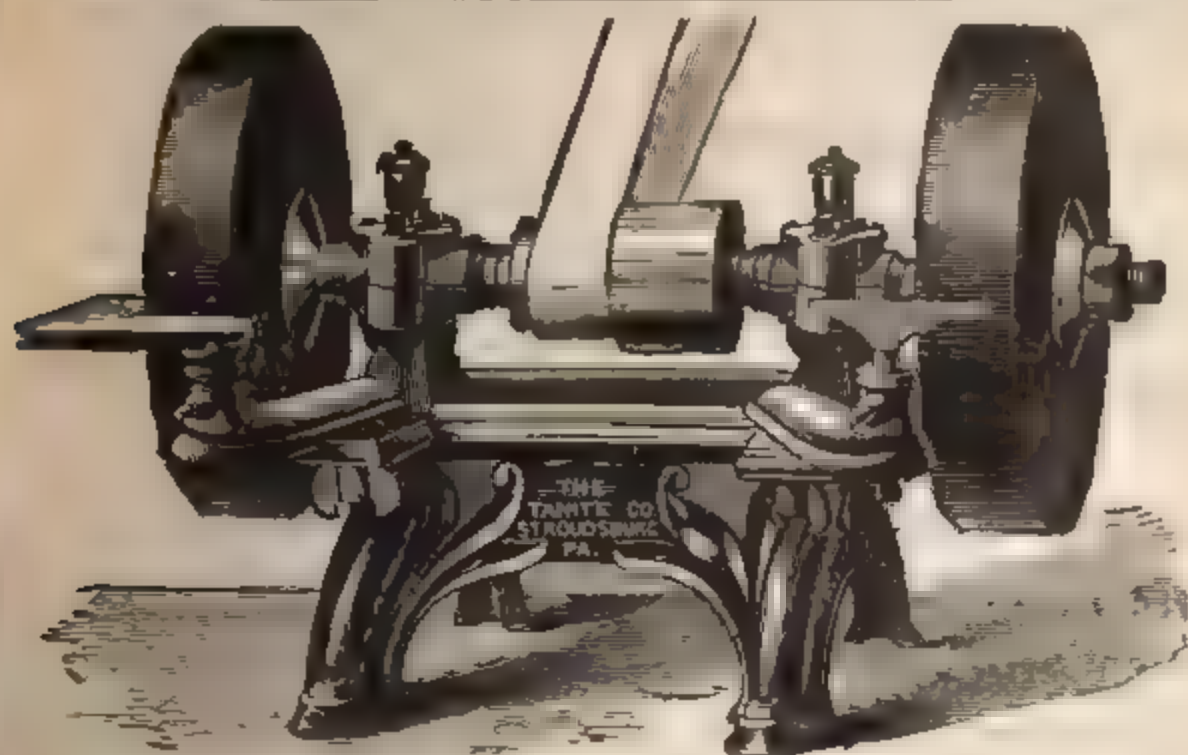
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Milling Tools, Parallel Vices, Forges, &c., always in Stock in large variety.



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OFFICES AND SHOW ROOMS.

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### ELECTRIC LIGHT DEPARTMENT.

- 1.—Installations of Arc and Incandescent Lamps made on a new and economical system, in which all naked wires can be handled without inconvenience or danger.
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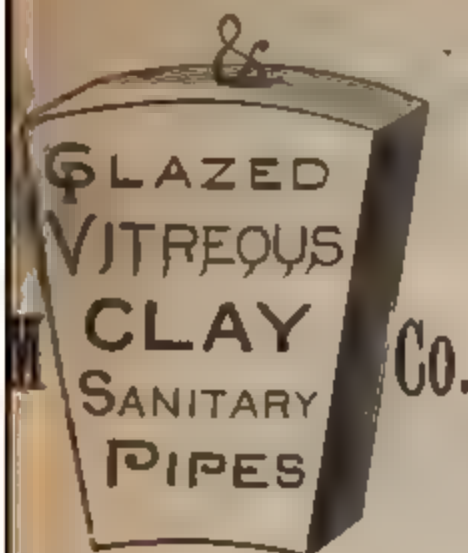
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**GLAZED VITREOUS ELECTRICAL TUBES,**  
FOR UNDERGROUND PURPOSES.

## Glazed Vitreous Electrical Tubes.

This invention promises to assume large proportions in the development of Electricity. The Tubes are manufactured from the finest Potter's clay, perfectly Vitreous when fired, Acid-proof, Non-corrosive, and capable of resisting a greater pressure than Iron. They are so constructed as to admit Negative and Positive Wires without becoming tangled, thereby supplying a desideratum long needed. These Tubes will prove valuable for Telegraphic, Telephone and Electric purposes (underground use), being impervious to water or any other matter of a deleterious character. The Tubes are in Sections of 2 ft. 4 in., tapered and socketed so that a tight joint can readily be obtained. Any diameter can be made to order.

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PRICES WILL BE GIVEN ON APPLICATION.



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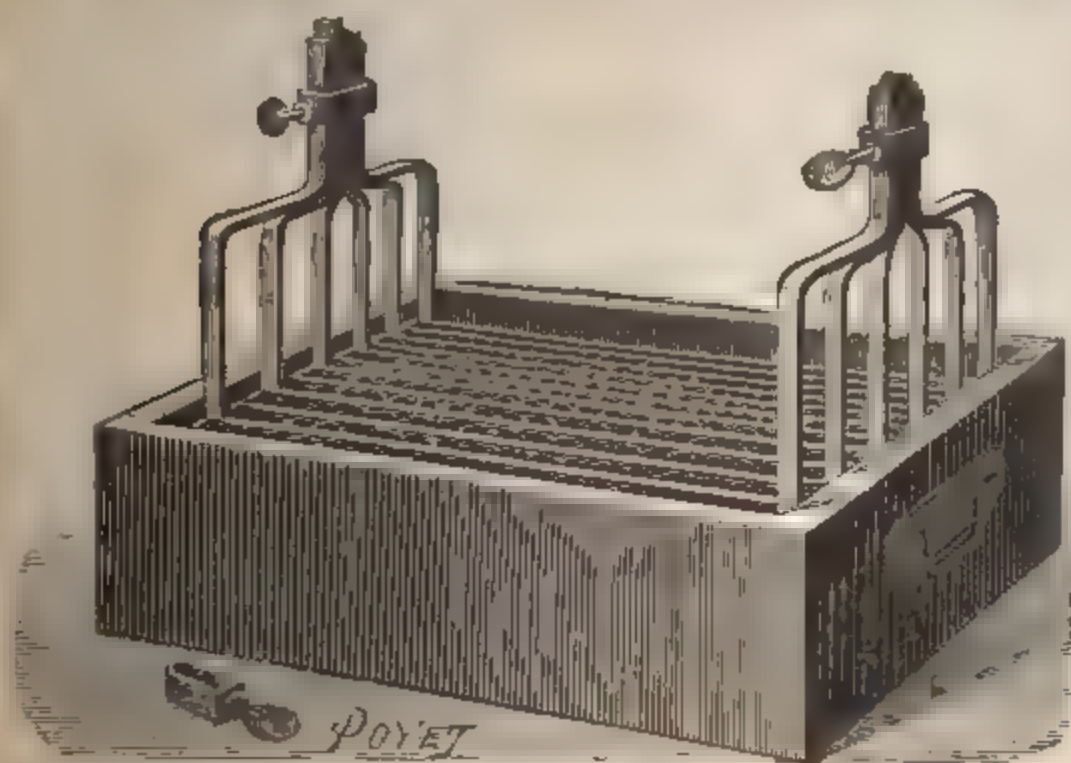
**BERLY, Civil and Electric Lighting Engineer,**

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**OTHOMB'S PATENT  
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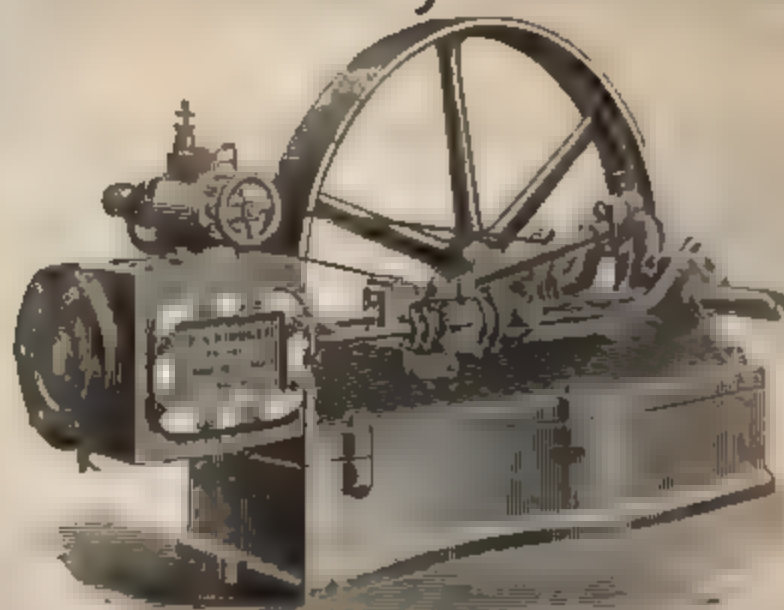
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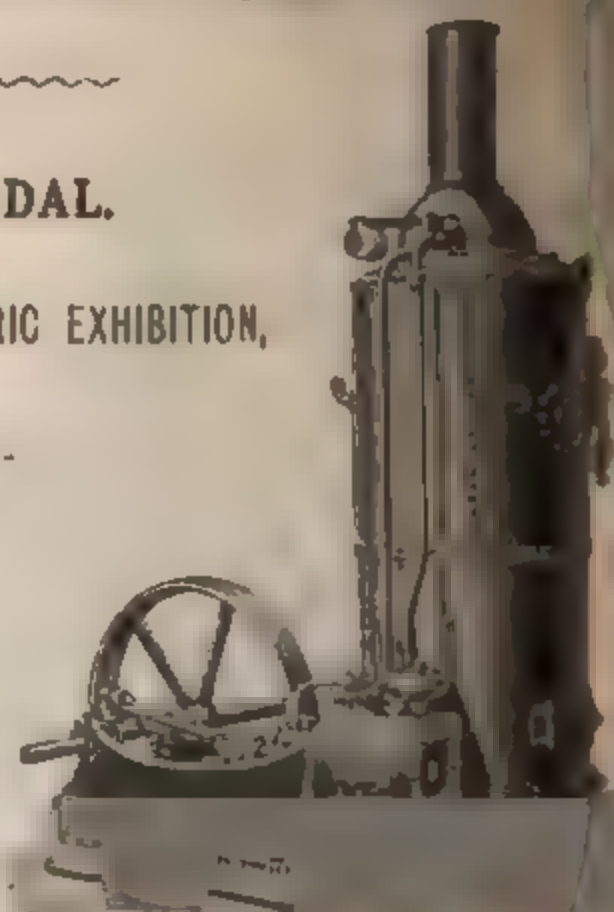
Testimonials from the JABLOCHKOFF and other Electric Light  
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**INTERNATIONAL ELECTRIC EXHIBITION,**

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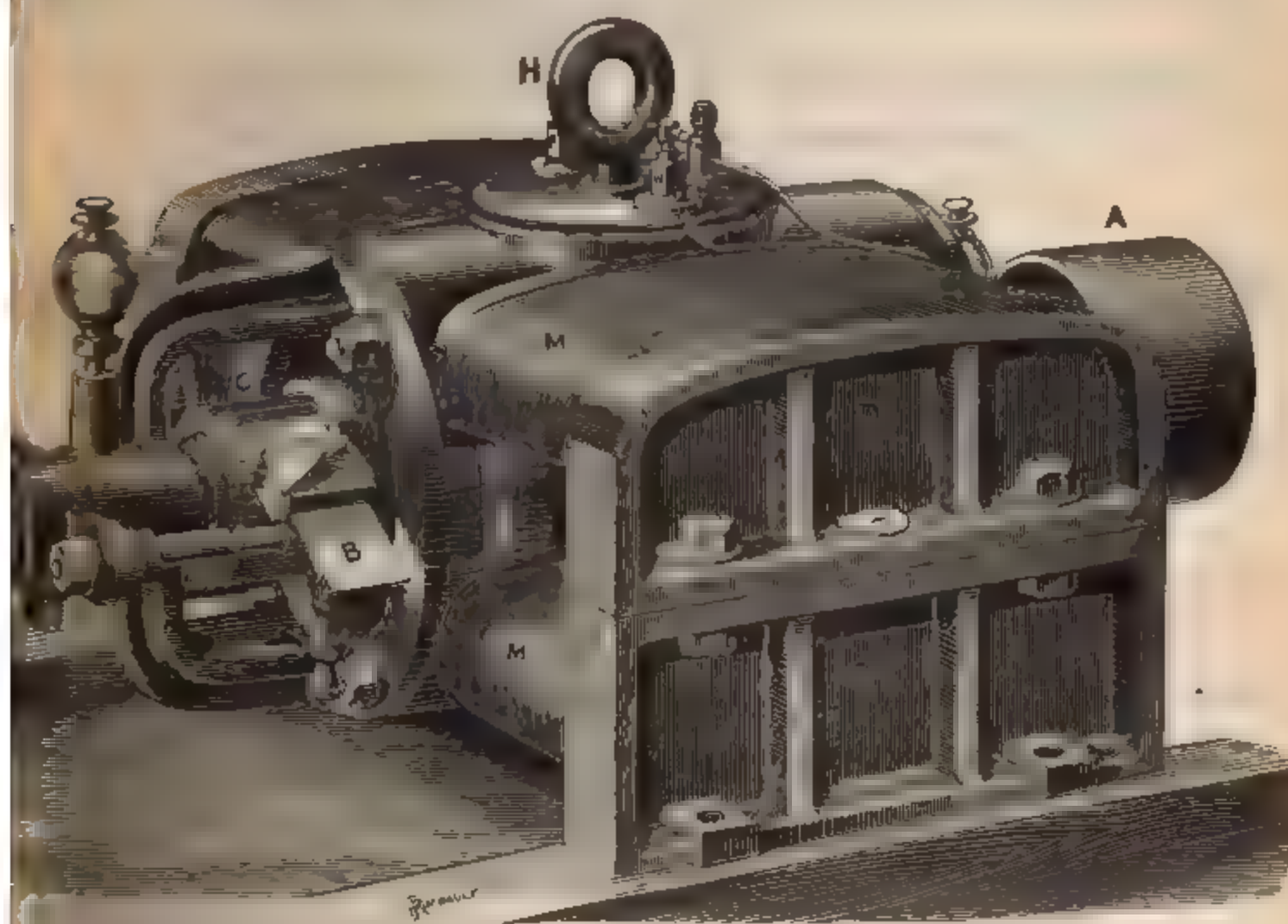


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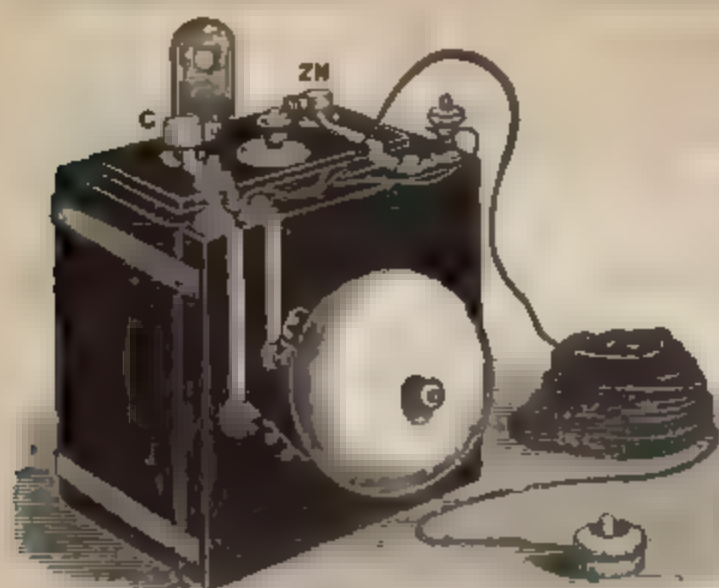
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PNEUMATIC TUBES FITTED WITH  
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PATENT TELEPHONIC WIRES,

TO PREVENT INDUCTION BOTH FOR

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**BLOCK** of **OXYCLE** of **MANGANESE**, and generally for all kinds of Contin  
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**JOHNSON'S**  
 PATENT  
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*Supplied with all Royalties fully paid.*

**Telephone Lines Erected & Maintained.**

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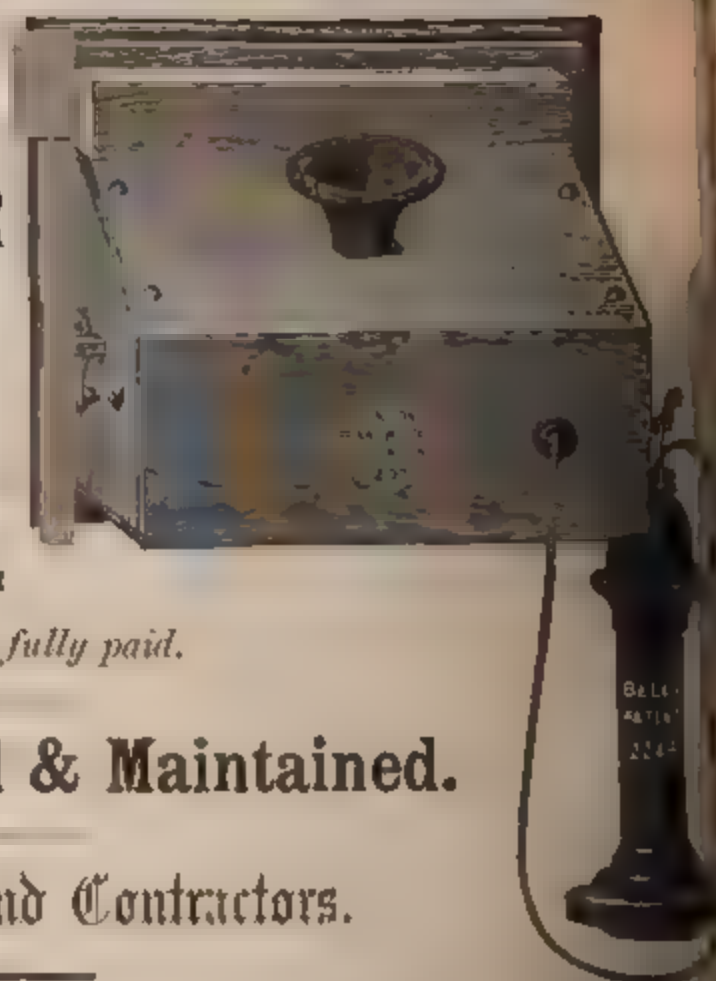
Gold Medals:—Paris Electrical Exhibition, 1881; and Crystal Palace  
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SOLE PROPRIETORS OF THE **GRAMME MACHINE PATENT**  
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ALL DESCRIPTIONS OF **ARC & INCANDESCENT LAMPS SUPPLIED.**

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| BRITISH INCANDESCENT LAMPS, suitable for Domestic purposes, from | £  | s | d |
| ARC LAMPS                                                        | 0  | 5 | 0 |
| GRAMME MACHINES                                                  | 40 | 0 | 0 |

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**E ELECTRIC LIGHTING SUPPLY**  
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Manufacturers of every description of Apparatus  
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Sole Makers of Hedges' Patent Spark  
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for Incandescent Lamps, fitted with the  
Patent Reliable Safety Fuse.

Arrangement of these Switches entirely does away with the chance of setting fire  
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Resistances in Iron, German Silver or Carbon.

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FIG. 6.



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The ONLY MEDAL Awarded for  
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## TELEGRAPH CABLE MAKING MACHINE

*Suitable for every description of Cables (Land and Submarine).*

## WIRE STRANDING MACHINE

For making Telegraph and Telephone Strand with any number of

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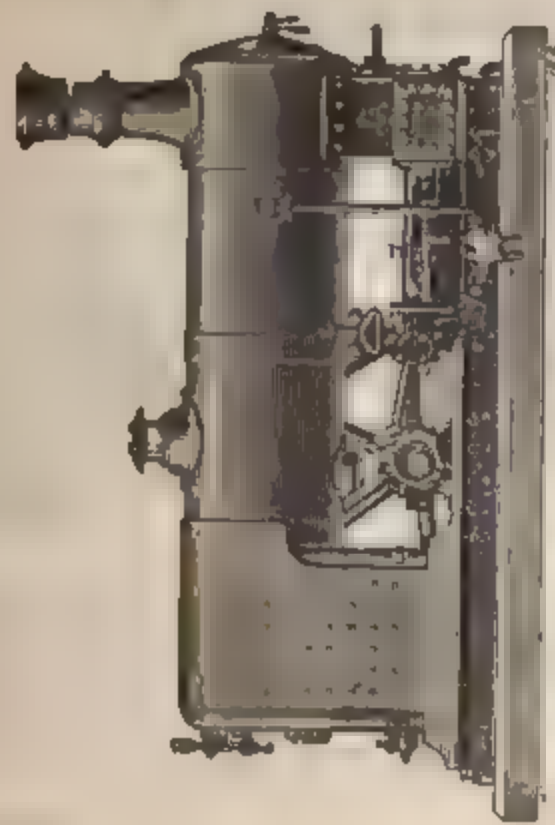
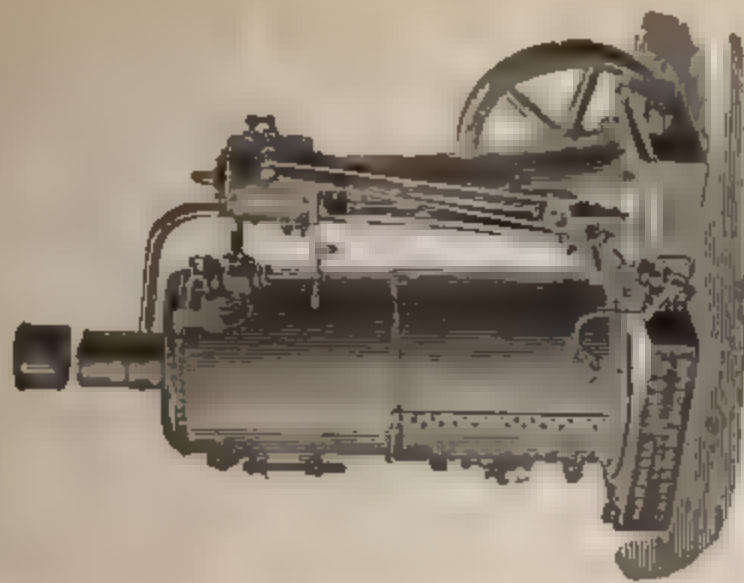
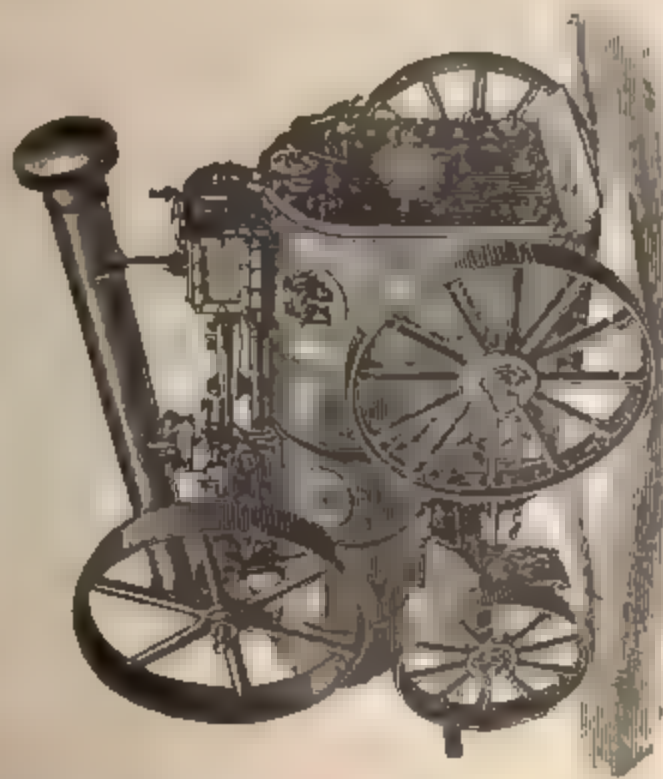
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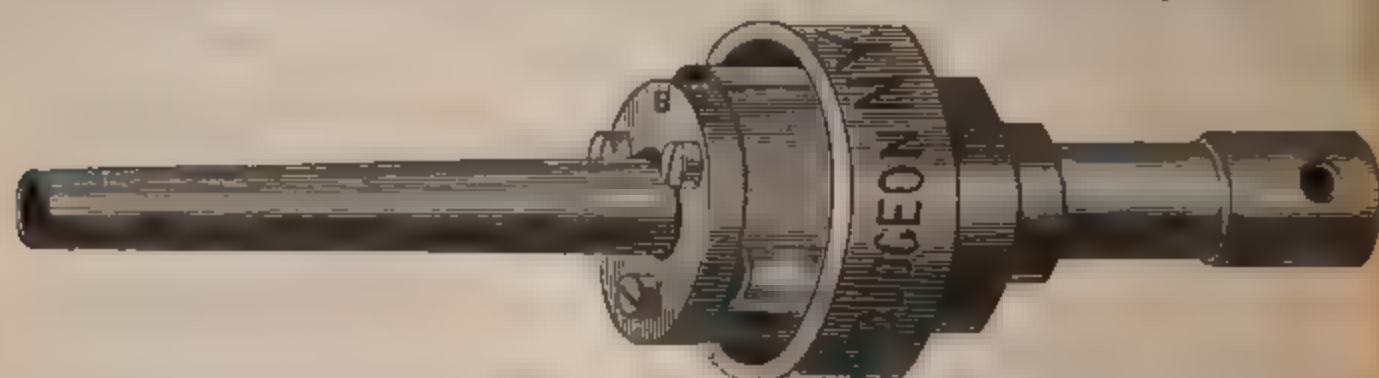
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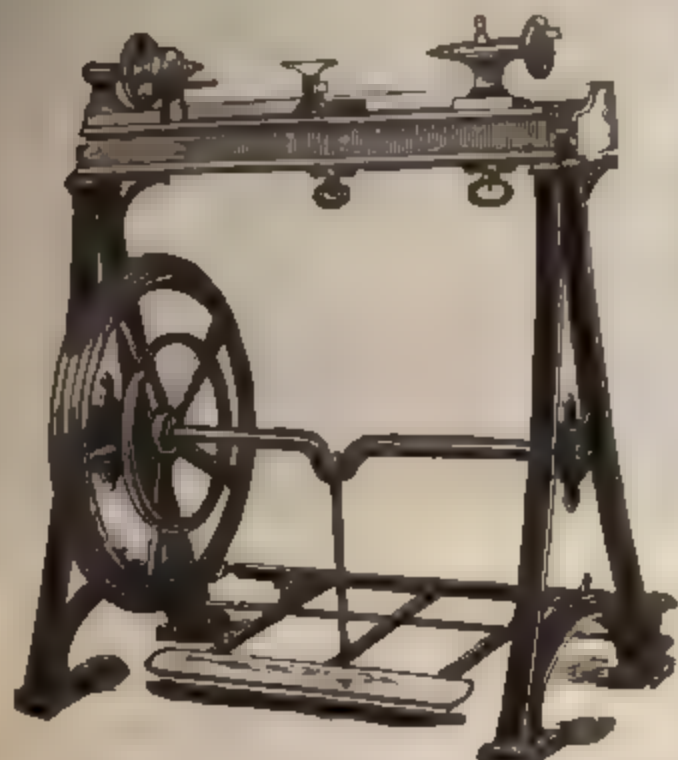


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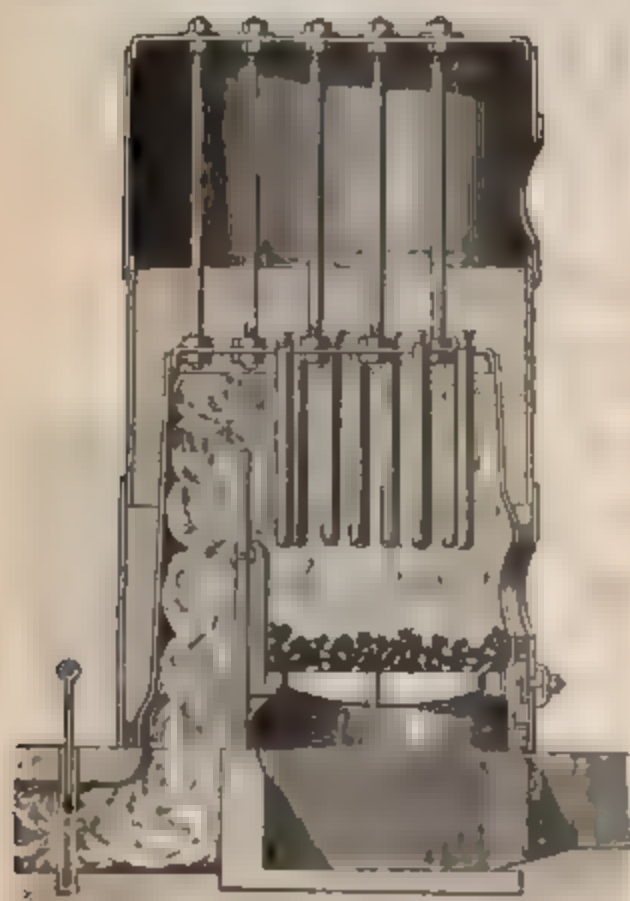
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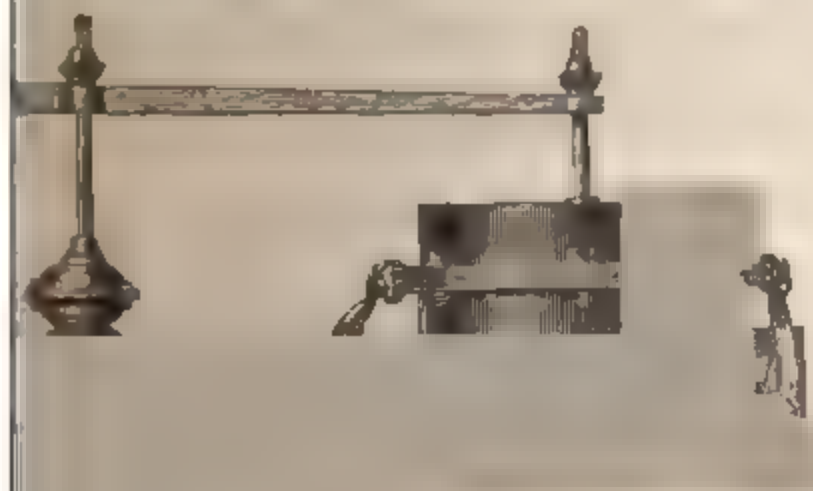
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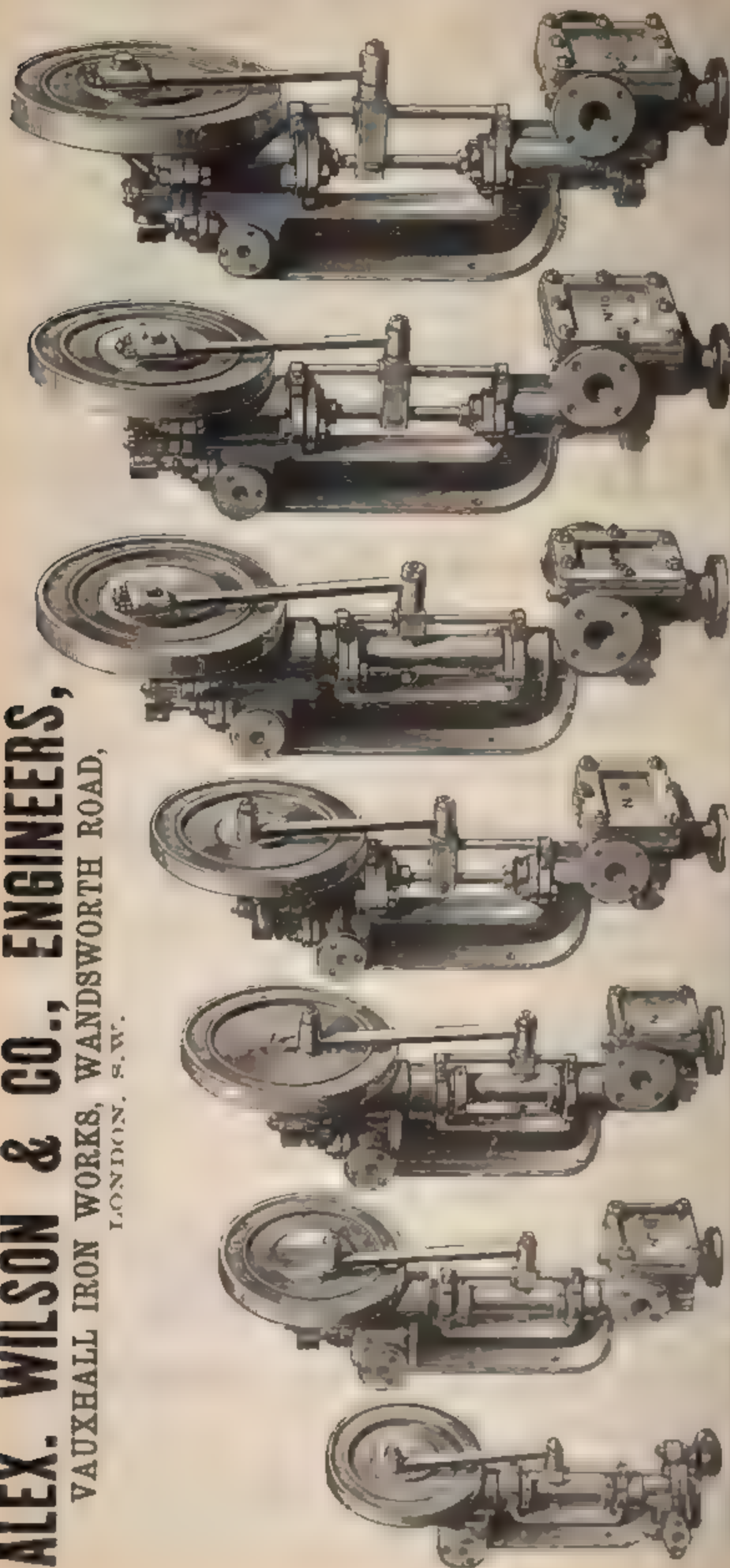
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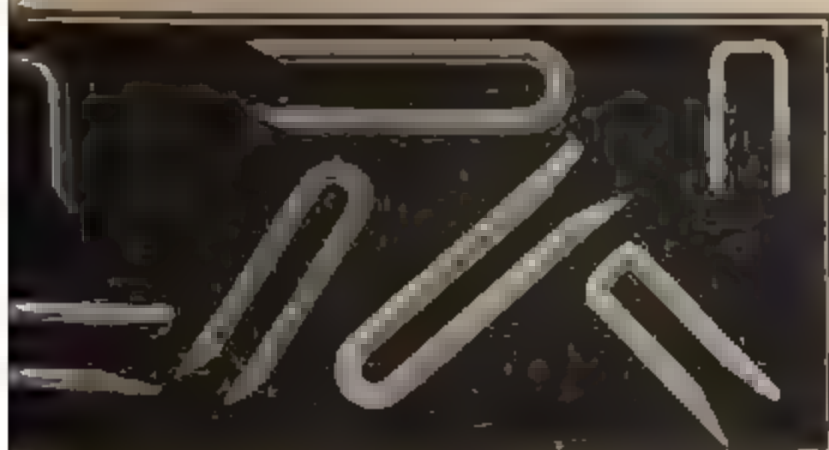
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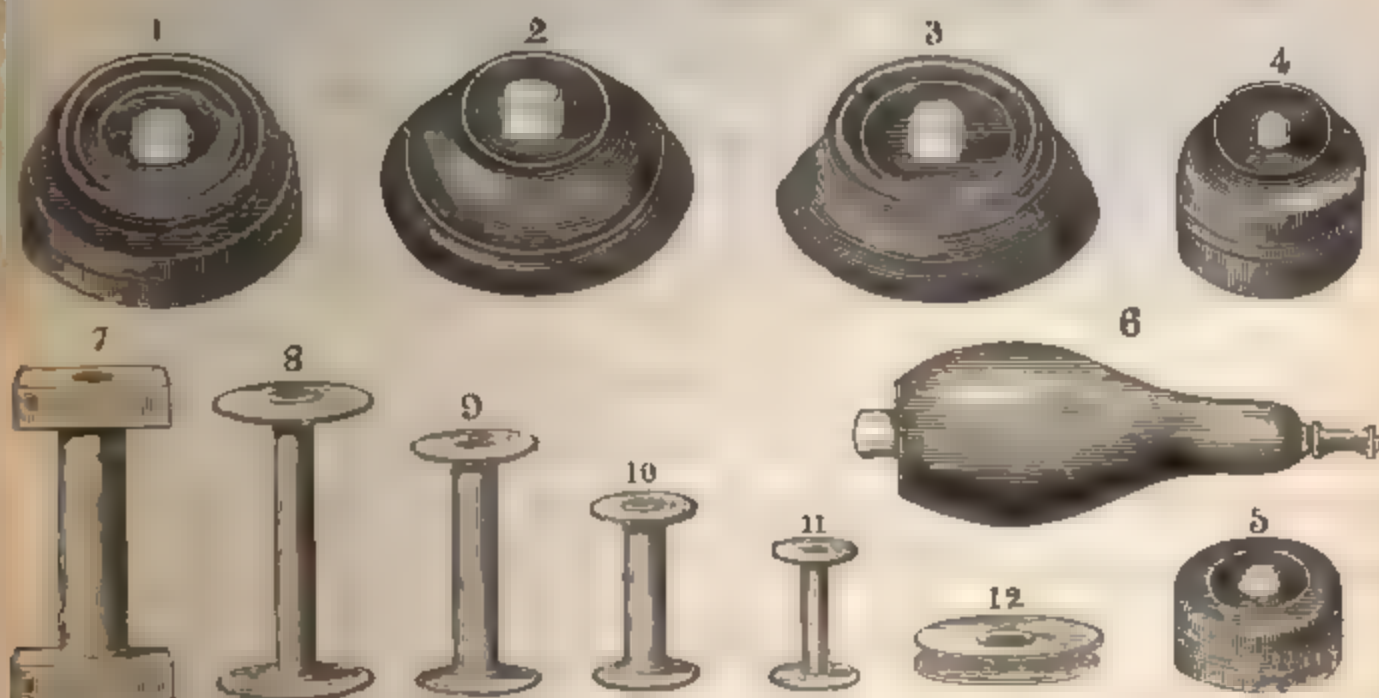
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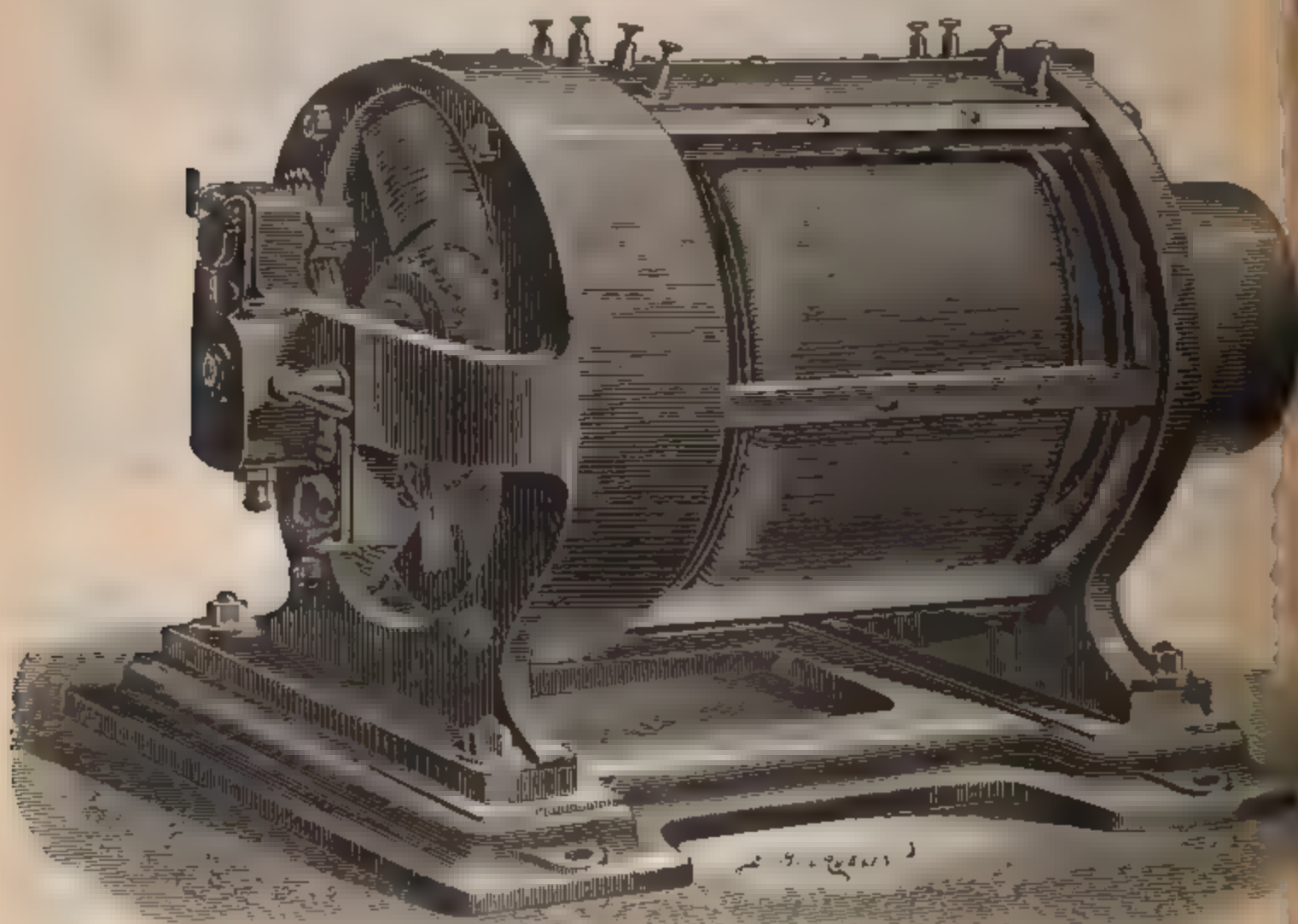


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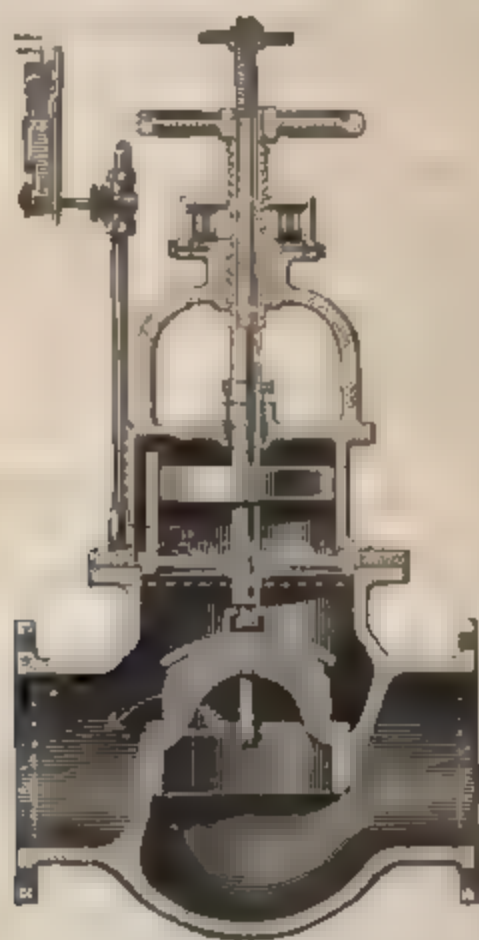
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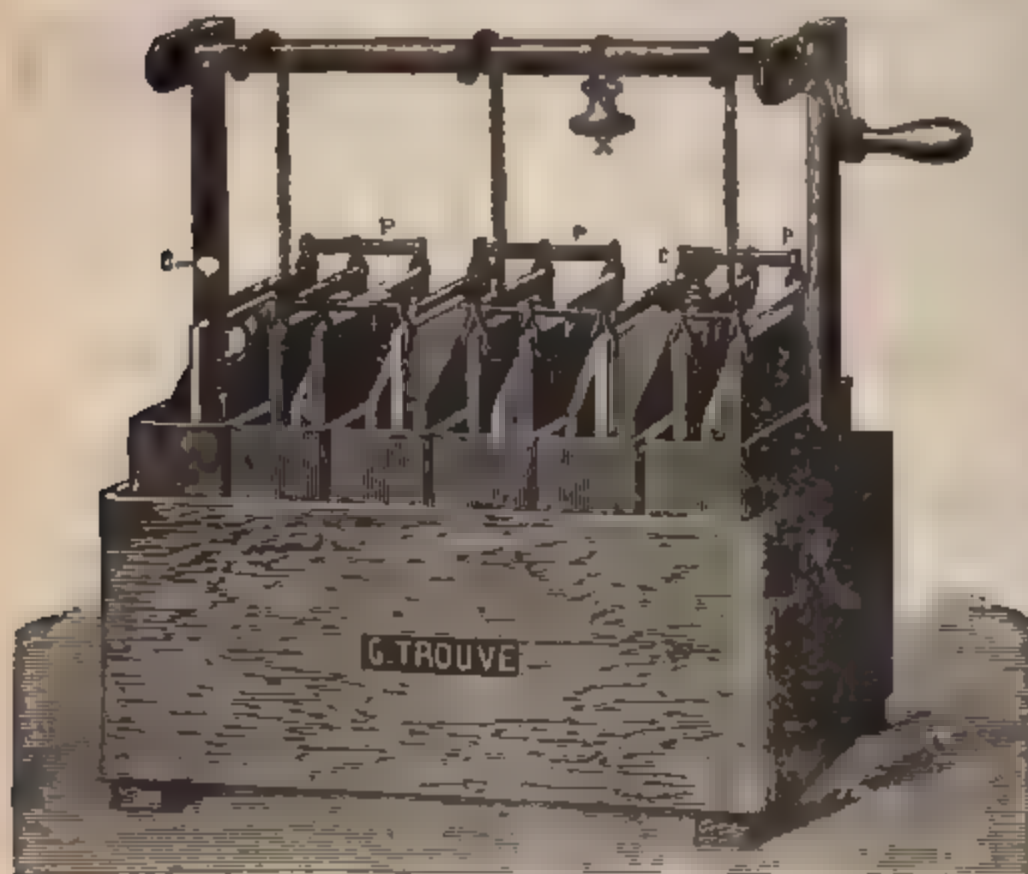
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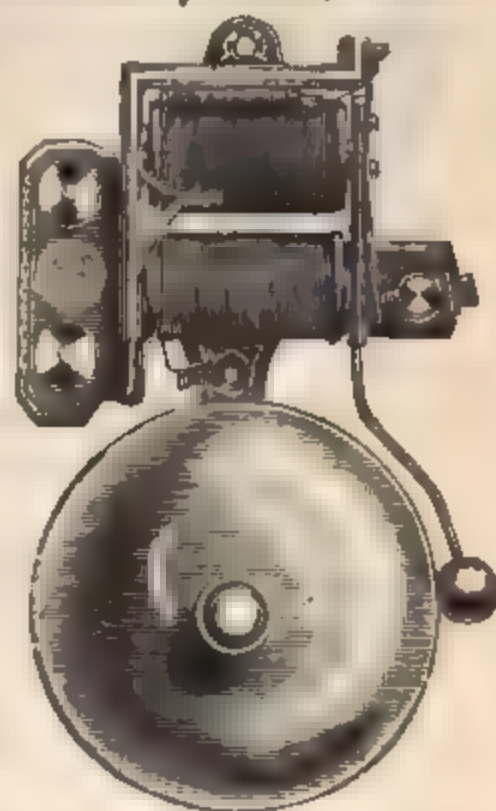
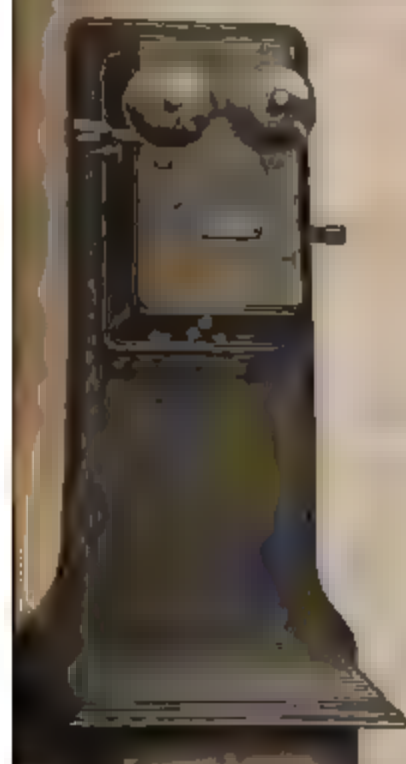
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**1883-84.**

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## 1884

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# PREFACE.

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presenting the American section to the subscribers and purchasers of

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**UNIVERSAL ELECTRICAL DIRECTORY & ADVERTISER,**

**FOR 1883-84,**

ask lenient judgment for any errors of omission or commission that may have  
pt into this comprehensive and extensive work. We claim the right to the  
rd "UNIVERSAL," covering, as it does, the whole electrical professions,  
ades and interests, except some embryo undertakings which have not advanced  
t enough at this writing for entry here, or culminated to a point where  
fidence may be freely given. Their place will be found if sufficiently developed  
next year's Edition, which will be a necessity, by the continued growth  
solid Electric business throughout the world. The apathy of strictly  
fessional electricians in aiding such a work as this to perfect completeness  
giving names and necessary information, we may say, has been triumphed  
er in this American section, for which we thank one and all.

Electricians, as well as contingent Electrical trades and professions, will find  
this Directory a bulletin of the world's Electrical business that can be  
and no where else in one volume: Therefore, it offers the greatest advantage to  
business men and professional electricians, in point of great economy, as a  
permanent authority always at hand, as well as containing general information  
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**J. A. BERLY,**

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# INTRODUCTORY, EDITORIAL & REMARKS

## ON THE PAST YEAR IN AMERICA.

---

THE success of the 1882-83 Edition, assures us that our efforts for this present issue 1883-84 will be thoroughly appreciated. Our aim has been to present a more complete enlarged, and correct list of manufacturers and dealers in electrical and contingent trades in the United States of America, than ever offered in any Directory. We have in furthering this end spared no expense in collecting our information from every available source.

To those who are as yet in ignorance of the object of this compilation, we would say that it is intended as a medium of communication between the Scientific and Manufacturing World, opening up the field of trade to the Inventor, and supplying business houses with lists of professional and experimental electricians, which they could not otherwise obtain, except at great labour and expense.

A glance at the index to American trades will prove that, instead of the possibility of the present work being limited, it has been a question of very careful judgment, just where the compiler should draw the line; for besides those having *direct* interest in electrical matters, like Telegraph, Telephone and Electric Light Companies, supply agents, manufacturers and dealers, there is a large class of merchants and professionals, such as brass and copper manufacturers, chemists, designers, electrotypers, engine makers, engineers, glass manufacturers, underground tube makers, metal dealers, opticians, patent solicitors, engravers, platers, railroad superintendents and purchasing agents, publishers, rubber, screw, steel, iron, wire and zinc manufacturers, &c., who have a very large interest in the success of electrical process, and who can scarcely be classed therefore as "indirect," inasmuch as ELECTRICITY in its multifarious branches, depends so largely on these corollary trades and professions. We have added a number of new tables, &c., which have been compiled with great care, in the full knowledge of their importance, and that they will prove valuable to both the professional and business community.

There appears to be, at first sight, a large amount of space devoted to the Metropolis in proportion to the whole country; but, when we consider that New York City and suburbs, with the neighbouring Cities of Brooklyn, Jersey City, Newark, &c., represents over 2,000,000 population, and also that every large manufactory, railroad, steamship line, mine, &c., in the United States and Canada, has representatives in New York, either by agent or regular branch house, we see that New York City may be said to be an epitome of the Electric trade of the country. But, of course, this does not take anything from the local interests of any one city or section, and they are each rapidly growing productive in every department of Electricity.



The changes in the Telephone and Electric Light Departments are noted elsewhere. The tendency being greatly to consolidate the numerous local companies under one general management, and the manufacture of instruments and apparatus, to a few agencies.

Electric Lighting has made rapid strides over the entire Continent, many small towns using it in preference to establishing gas manufacturies, as will be seen by examination of the long list of Brush agencies which we publish. But in such a great project as the lighting the East River Suspension Bridge, we hail the onward move over former unsurmountable difficulties fully understood by electricians, as a new triumph for the United States Electric Lighting Company.

A general committee, of all the principal Companies interested, has been formed to inquire into the feasibility of establishing underground systems in all the principal cities. The Edison Companies being the only ones, so far, who have uniformly laid their wires in tubes placed underground.

The past year has seen the extension of the Mexican, Central and South American land lines and cables, so that increased facilities are being offered to parties desiring to reach by telegraph the interior of Mexico, Central America, United States of Columbia, Venezuela, Peru, Chili, Bolivia, Brazil, &c.

The centennial of Bolivia was celebrated at Carracas, Venezuela, by the opening of a new railway from the seaport La Guira to the capital, and the inauguration of an International Exposition, at which many of our electric interests found a representation.

In the United States, the regular Exhibitions at the American Institute, New York and Cincinnati, O., Exposition, continue to show the newest developments in Electric Machinery.

At the Chicago Railway Exposition, the Experimental Electric Railway drew large crowds of interested spectators and won high encomiums.

The success of the Atlanta, Ga., Cotton Exposition, led the Louisville, Ky., citizens to inaugurate a similar one on a larger scale, which was formally opened by President Arthur in August. Next year will witness the opening of the Exhibition at New Orleans, in the heart of the cotton and sugar growing States.

At all these Exhibitions, which aim towards the International, much interest has been centered on the Electric Light, Telephone, Telegraph and other similar products of Electric invention.

Among the books of the year, probably the most important addition ever made to technical literature, is the fourth or supplementary volume of KNIGHT'S NEW MECHANICAL DICTIONARY. A description of tools, instruments, machines, processes and engineering, with profuse indexical references to technical journals (1876-1880), by EDWARD H. KNIGHT, A.M., LL.D., published by Houghton, Mifflin & Company, Boston, Mass.

In a work of such magnitude, comprising four thousand pages of concisely written descriptions, profusely illustrated with engravings, a very large part of the book (especially the last volume just completed) is necessarily devoted to electricity and its kindred appliances. A glance through this recent volume shows over 600 titles on electrical subjects, 100 of which are descriptions of various forms of batteries. The indexes are a stupendous work in themselves, for by their aid the reader can with little trouble obtain a general knowledge on any given subject. Those under "Electric Light" cover four and a-half columns solid nonpareil type.

Dr. Knight did not live to see the completion of this, his life's greatest work, but he left his unpublished manuscript ready for the printer's hand, having finished it just before his death.

In 1884, the Franklin Institute of Philadelphia, will hold an International Exposition of Electricity, similar to those held in Paris, London, Munich and Vienna, in 1881-2-3. We bespeak for the Franklin Institute a hearty support in their enterprise. A Society, so long and favourably known as an institution founded for the purpose of furthering the interests of inventors and manufacturers, is peculiarly well fitted to undertake the first American Electric Exposition, and push it to an ultimate success; a full draft of their circular will be found annexed.

In the Telegraphic world, the greatest event of the year was the strike of the Telegraphers, which occurred on July 19th, and lasted 30 days. It is not our province to enter into the *pro* and *con* of the controversy, further than to note that the blow was aimed principally by the employees against the Western Union Telegraph Company, as representing the largest and most powerful organization. The first result was shown in the determination of the Companies to resist the demands rather than yield to what they considered unjust. At the termination of the strike of the operators the Western Union Company voluntarily lessened the hours of service and increased the rate per hour for night work.

Other results of the strike were the consolidation of the smaller Companies against their great rival; great talk in the press of the prospect of a Governmental Telegraph being agitated on the next United States Congress; and the formation of a large number of new Telegraph Companies, one of the most prominent being the New Cable Company, under the auspices of James Gordon Bennett, of the *New York Herald*, and John W. Mackay, of San Francisco, Cal., the President of the Postal Telegraph Company. The International interests of Cable Telegraphy have united in the persons of these two progressive gentlemen, the public welfare of the East and West, and in fact the whole country, from whom they have the sincere wishes for the perfect success of their project, which should culminate about June, 1884. The Cables being now under construction by Messrs. Siemens Brothers, of London.\*

CUMMING & BRINKERHOFF,

*Publishers' Agents and Compilers of the American Section,*

219, East 18th Street, New York.

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\* We regret to record the sudden death of Sir WILLIAM SIEMENS.

DESCRIPTIVE TABLE OF METALS.  
PILED FROM VARIOUS SOURCES BY GEORGE CUMMING.

|                                                                                                                                                                                                                | Price per<br>Avoirdupois<br>pound. | Specific<br>gravity. | Chemical<br>symbol. | Equivalent. | Fusing<br>point<br>Fah. | Conductivity<br>electric. | Conductivity<br>caloric. |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|----------------------|---------------------|-------------|-------------------------|---------------------------|--------------------------|
| —A white metal, discovered in 1830 by Sefström ...                                                                                                                                                             | \$10,000 00                        | —                    | V                   | 68°50       | —                       | —                         | —                        |
| —An alkaline metal, so called from exhibiting dark<br>s in the spectrum analysis, discovered in 1860 by<br>and Kirchhoff ... ..                                                                                | 9,070 00                           | —                    | Rb                  | 85°36       | —                       | —                         | —                        |
| —A metal obtained from the minerals zircon and<br>h, in the form of a black powder ... ..                                                                                                                      | 7,200 00                           | —                    | Zr                  | 22°40       | —                       | —                         | —                        |
| —An alkaline metal; the lightest metal known,<br>at ductile and malleable... ..                                                                                                                                | 7,000 00                           | 5°436                | L                   | 7°00        | 356                     | —                         | —                        |
| —A metal in the form of a grayish-black powder ..                                                                                                                                                              | 5,100 00                           | 2°1                  | Gl                  | 4°70        | 1,800                   | —                         | —                        |
| —The metallic base of lime, discovered in 1808 by<br>mphrey Davy ... ..                                                                                                                                        | 4,500 00                           | 1°57                 | Ca                  | 20°00       | —                       | —                         | —                        |
| —A malleable metal of a yellowish color, harder<br>ad, discovered in 1793 by Hope and Klaproth ...                                                                                                             | 4,200 00                           | 2°51                 | Sr                  | 43°80       | —                       | —                         | —                        |
| —Obtained from the mineral gadolinite, found in<br>l .. ..                                                                                                                                                     | 4,080 00                           | —                    | Tb                  | —           | —                       | —                         | —                        |
| —Discovered in 1828, is of a grayish-black color, and<br>re perfectly metallic ... ..                                                                                                                          | 4,080 00                           | —                    | Y                   | —           | —                       | —                         | —                        |
| A metal found associated with yttrium ... ..                                                                                                                                                                   | 3,400 00                           | —                    | E                   | 112°6       | —                       | —                         | —                        |
| A metal of high specific gravity, a grayish-white<br>and a lamellar texture ... ..                                                                                                                             | 3,400 00                           | —                    | Ce                  | 46°00       | —                       | —                         | —                        |
| —A metal found associated with cerium and<br>um, discovered in 1842 by Mosander... ..                                                                                                                          | 3,200 00                           | —                    | D                   | 48°00       | —                       | —                         | —                        |
| —Of a gray color, very hard and brittle; extracted<br>e ores of platinum, discovered in 1843 by Claus ...                                                                                                      | 2,400 00                           | 11°3                 | Ru                  | 52°11       | —                       | —                         | —                        |
| —Of a white color and metallic lustre, and extremely<br>d brittle. It requires the strongest heat that can<br>luced by a wind furnace for its fusion, discovered in<br>Wollaston ... ..                        | 2,300 00                           | 12°1                 | Ro                  | 53°20       | —                       | —                         | —                        |
| —Previously named columbium, first discovered in<br>found at New London, Conn. ... ..                                                                                                                          | 2,300 00                           | —                    | Nb                  | 48°80       | —                       | —                         | —                        |
| The yellow metallic base of baryta ... ..                                                                                                                                                                      | 1,800 00                           | —                    | Ba                  | 68°50       | —                       | —                         | —                        |
| —A metal discovered in 1803, and found in very<br>rains, of a steel-gray color and fibrous structure ...                                                                                                       | 1,400 00                           | 11°8                 | Pd                  | 53°20       | —                       | —                         | —                        |
| —A brittle, gray-colored metal, found with platinum<br>Found native as an alloy with osmium in lead-gray<br>and is the heaviest of known substances ... ..                                                     | 1,300 00*                          | 10°                  | Os                  | 99°40       | —                       | —                         | —                        |
| —Discovered in 1789, is of a reddish-brown color,<br>metallic lustre, and is commonly obtained in a<br>ine form ... ..                                                                                         | 1,090 00                           | 21°15                | Ir                  | 98°60       | —                       | —                         | —                        |
| —A metal of a deep blue color, discovered in 1791,<br>wall, England ... ..                                                                                                                                     | 900 00                             | 18°4                 | U                   | 60°00       | —                       | —                         | —                        |
| —A hard, brittle metal of a grayish-white color,<br>fficult of fusion, discovered in 1797 by Vanquelin ...                                                                                                     | 689 00                             | —                    | Ti                  | 25°00       | —                       | —                         | —                        |
| —A reddish-yellow color and metallic lustre; one of<br>viest of metals, and not being subject to oxidization<br>r change from exposure to the atmosphere, is well<br>o be used as coin ( <i>Aurum</i> ) ... .. | 500 00                             | 5°5                  | Cr                  | 26°30       | —                       | —                         | —                        |
| —It is obtained only in small, separate globules,<br>ackish, brilliant mass; these are brittle and ex-<br>infusible ... ..                                                                                     | 330 00                             | 19°34                | Au                  | 196°44      | 2,016                   | 77°0                      | 53°2                     |
| —A metal closely resembling lead in general ap-<br>e, being of nearly the same color, density and<br>... ..                                                                                                    | 225 00                             | 8°62                 | M                   | 48°00       | —                       | —                         | —                        |
| ... ..                                                                                                                                                                                                         | 225 00                             | —                    | Tl                  | —           | —                       | 9°16                      | —                        |

\* Osmium vaporizes at 220°.

## DESCRIPTIVE TABLE OF METALS—continued.

|                                                                                                                                                                                                | Price per<br>Avoirdupois<br>pound. | Specific<br>gravity. | Chemical<br>symbol. | Equivalent. | Fusing<br>point<br>Fahr. | Conductivity<br>electric. |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|----------------------|---------------------|-------------|--------------------------|---------------------------|
| <b>Platinum</b> —A metal of the colour of silver, but less bright; it is harder than iron, very ductile, and capable of being rolled into thin plates; it is one of the heaviest of metals     | 150 00                             | 21·                  | Pt                  | 98·80       | 4,501°                   | 18·00                     |
| <b>Manganese</b> —A metal of a dusky white, or whitish-gray color, very hard and difficult to fuse ... ..                                                                                      | 190 00                             | 8·                   | Mn                  | 27·49       | —                        | —                         |
| <b>Tungsten</b> —A metal of a grayish-white color and considerable lustre, discovered in 1781, it is brittle, nearly as hard as steel, and is fused with extreme difficulty ( <i>Wolfram</i> ) | 116 00                             | —                    | W                   | 92·00       | —                        | —                         |
| <b>Magnesium</b> —The metallic base of magnesia ... ..                                                                                                                                         | 64 00                              | 1·7                  | Mg                  | 12·00       | —                        | —                         |
| <b>Potassium</b> —A bluish-white, lustrous metal; it has an atomic weight of 39, and is lighter than water ( <i>Kalium</i> )                                                                   | 64 00                              | 0·86                 | K                   | 39·00       | 136°                     | —                         |
| <b>Silver</b> —A soft, white, metallic element, very malleable and ductile ( <i>Argentum</i> )                                                                                                 | 20 00                              | 10·5                 | Ag                  | 108·00      | 1,872°                   | 106·87                    |
| <b>Aluminium</b> —Discovered in 1828 by Wohler, the metallic base of clay; it is white, but with a bluish tinge, and is remarkable for its lightness, tensile strength and conductivity        | 16 00                              | 2·5                  | Al                  | 18·70       | 2,268°                   | 33·76                     |
| <b>Cobalt</b> —A metal of reddish-gray color, brittle and difficult of fusion ** ... ..                                                                                                        | 16 00                              | 8·5                  | Co                  | 29·50       | —                        | 17·22                     |
| <b>Sodium</b> —A yellowish-white metallic element, soft like wax, and lighter than water ( <i>Natrium</i> , ... ..)                                                                            | 8 00                               | 0·973                | Na                  | 23·00       | 207°                     | —                         |
| <b>Nickel</b> —A grayish-white metal of considerable lustre †                                                                                                                                  | 5 00                               | 8·8                  | Ni                  | 29·50       | —                        | 13·11                     |
| <b>Cadmium</b> —A white metal related to zinc, and both ductile and malleable ‡                                                                                                                | 4 00                               | 8·6                  | Cd                  | 56·00       | 442°                     | 23·72                     |
| <b>Bismuth</b> —A metal of a reddish-white color, somewhat harder than lead, and rather brittle ... ..                                                                                         | 2 50                               | 9·8                  | Bi                  | 210·30      | 512°                     | 1·26                      |
| <b>Mercury</b> —A white metal, liquid at common temperature, and congelating at 40° below zero Fahr. ( <i>Hydrargyrum</i> ) ...                                                                | 96                                 | 13·5                 | Hg                  | 100·00      | +                        | 1·33                      |
| <b>Arsenic</b> —A metal of a steel-gray color and brilliant lustre, very brittle ... ..                                                                                                        | 50                                 | 5·8                  | As                  | 75·00       | "                        | 4·76                      |
| <b>Tin</b> —A white, soft, non-elastic metal ( <i>Stannum</i> ) ... ..                                                                                                                         | 25                                 | 7·2                  | Sn                  | 58·00       | 442°                     | 12·36                     |
| <b>Copper</b> —A metal of a reddish color, ductile, malleable and tenacious; it is among the most elastic and sonorous of metals ( <i>Cuprum</i> ) ... ..                                      | 25                                 | 8·9                  | Cu                  | 81·70       | 1,996°                   | 96·0                      |
| <b>Antimony</b> —It is of a tin-white color laminated or crystalline, fusible, and evaporizable at a rather low temperature ( <i>Stibium</i> ) ... ..                                          | 16                                 | —                    | Sb                  | 120·00      | 640°                     | 4·61                      |
| <b>Zinc</b> —A metal of a brilliant white color, with a shade of blue; it is not brittle, but less malleable than copper, lead or tin ... ..                                                   | 11                                 | 7·                   | Zn                  | 8·250       | 470°                     | 29·03                     |
| <b>Lead</b> —A metal of a dull, white color, with a cast of blue, it is the least elastic and sonorous ( <i>Plumbum</i> )                                                                      | 8                                  | 11·44                | Pb                  | 103·60      | 612°                     | 8·22                      |
| <b>Iron</b> —A metallic element, hard and very malleable when hot; the most easily magnetized of all metals ( <i>Ferrum</i> ) †                                                                | 2                                  | 7·8                  | Fe                  | 28·00       | ++                       | 20·73                     |

\* Arsenicum volatilizes without fusion at 356°. The arsenic of commerce is arsenious acid ( $AsO_3$ ).

† Mercury or quicksilver boils at 662°.

‡ The tin of commerce is iron plated with tin. Pure tin is commonly called "block tin."

§ Steel is iron in which is contained a small portion of carbon.

|| Cadmium vaporized at 600°.

¶ Nickel is strongly magnetic, but loses this property when heated to 660°.

\*\* Cobalt, in its pure state, is of no commercial value, but it attains considerable importance in compounds.

†† Cast iron fuses at 2 786°, wrought iron, 3 280.

## BELGIAN ANTI-FRICTION METAL is composed of

|          |     |       |
|----------|-----|-------|
| Copper   | ... | 20.   |
| Tin      | ... | 4.    |
| Antimony | ... | 0.5   |
| Lead     | ... | 0.25  |
|          |     | 24.75 |

Mix all the other ingredients before adding the copper.

**Doubladays** consist of cast iron, copper, glass, antimony, tin, spelter and lead. U.S. Patent 178,841.

**Coline** (French), asbestos and graphite equal parts, mix and reduce to a paste by adding silicate of soda or pressed to shape or turned when solid, steep in melted paraffine, wax or mineral oil. See U.S. Patents 189,684, 157,509, 154,317, 136,163, 234,482, 175,841, 217,946 and 159,154.



AMERICAN RAILROAD & TELEGRAPH TIME STANDARD.

into effect from noon, Sunday Nov. 18, 1883, in place of the various standards

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1884

JANUARY

The use of "Mean Local Time" has been almost entirely abolished. But, as a matter of interest, the relations of certain local times, as previously used, to STANDARD TIME, is temporarily shown in the columns on the right and left.

Atlanta, Ga. 12 22 A.M.  
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Mexico, 10 34 A.M.  
Milwaukee, W.T. 11 08 A.M.  
Minneapolis, 10 47 A.M.  
Mobile, Ala. 12 01 A.M.

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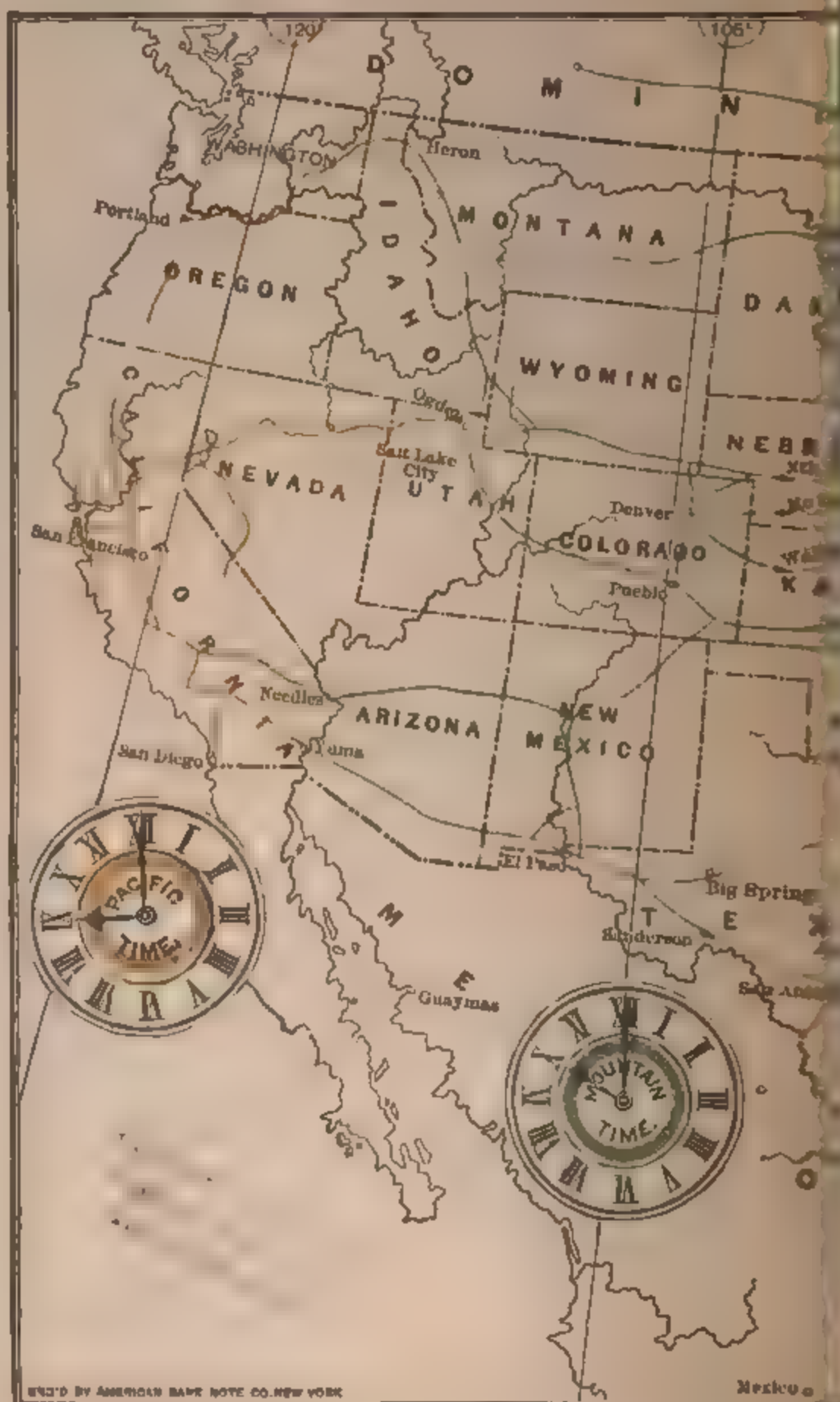
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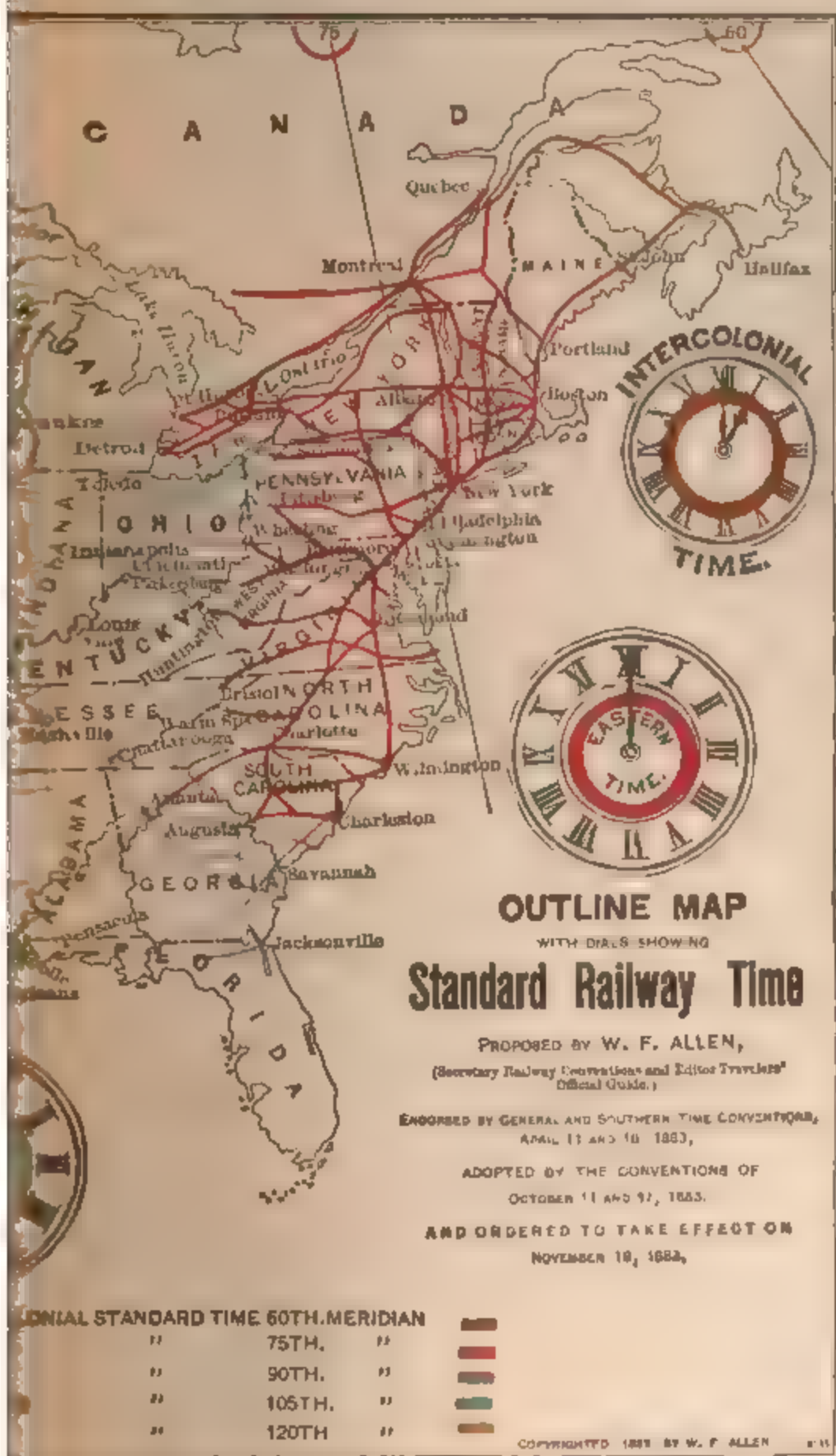
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# AMERICAN RAILROAD & TELEGRAPH TIME STANDARD.

Put into effect from noon, Sunday Nov. 18, 1883, in place of the various standards heretofore in use. See pages 562 and 563 (1883 Edition).

At the new time system North America is divided theoretically into five sections running north and south, each division being fifteen degrees of longitude in breadth. The time for all places in each division will be that of its central meridian. In Eastern Canada the standard will be known as "intercolonial time," which will coincide with the local time on the 60th meridian (four hours) west of Greenwich. In the United States, Alaska, Ontario, Manitoba and British Columbia, the standards will be known as the "Eastern," "Central," "Mountain," and "Pacific," times, corresponding respectively to the times on the 75th, the 90th, the 105th, and the 120th meridians west of Greenwich, five, ten, fifteen and eight hours slower than the English standard. Each of these meridians being one hour apart, the time for each division they enclose will be also one hour slower than that of the adjacent division to the eastward and one hour faster than that of the next division to the westward. In crossing a continent, therefore, travellers will not have to alter the minute hand of their watches, but can tell standard time by mentally adding an hour to the face time of the watch when crossing any one of the meridians going east or deducting an hour when crossing one of them going west. The advantages of the new system to the railroads and the travelling public are manifest. Instead of, as heretofore, fifty or more local time standards for the government of our vast interstate and continental traffic, the number of standards is reduced to five, and the latter are, moreover, capable of intercomparison, which cannot be said of the several dozen of local standards hitherto in use. The meridians from which time is reckoned are equidistant and the sun passes from one to another in one hour, no standard clock can differ from any clock showing local time at any point in two meridians by more than thirty minutes. The new system can therefore occasion no great permanent inconvenience in any locality where the standard time is known or is obtainable. As New York City is so near the 75th meridian, and its local time is only about four minutes faster than the standard, the transition will take place in the metropolis almost without exciting general notice. The Intercolonial Section will comprise all that part of the continent lying between a line which passes through the City of Fredericton, N.B., and the Atlantic Ocean. The Eastern section will comprise the United States from Maine to Florida, also the Lower Lakes. The Central section will comprise the Mississippi and Missouri Valleys the Upper Lakes and Texas. The Mountain region will comprise the Rocky Mountains, and the Pacific section will take in what is popularly called the Alaska Pacific slope, including British Columbia.

The divisions may be understood by a little study of the following diagram :—

| Pacific.   | Mountain.  | Central.                | Eastern.              | Intercolonial. |
|------------|------------|-------------------------|-----------------------|----------------|
| 21         |            | 14                      | 4<br>5 6<br>10 7<br>8 | 3 1<br>2       |
| 20         | 19<br>18   | 15 17 11<br>13<br>16 12 | 9                     |                |
| 8 o'clock. | 9 o'clock. | 10 o'clock.             | 11 o'clock.           | 12 o'clock.    |

The figures within the divisions denote the approximate geographical position of the various cities indicated thereby. 1, St. John's, N.F. ; 2, St. John, N.B. ; 3, Halifax, N.S. ; 4, Quebec ; 5, Toronto ; 6, Boston ; 7, New York ; 8, Washington ; 9, Charleston ; 10, Buffalo ; 11, Cincinnati ; 12, New Orleans ; 13, St. Louis ; 14, St. Paul ; 15, Kansas City ; 16, Galveston ; 17, Chicago ; 18, Denver ; 19, Salt Lake City ; 20, San Francisco ; 21, Victoria. When it is noon at 4, 5, 6, 7, 8, 9 and 10, representing New York, Boston, Washington, Charleston, New Orleans, Quebec and Toronto, it will be one hour after noon, or 1 o'clock, at 1, 2 and 3, representing the City of St. John's and Halifax. At the same time it will be one hour before noon (11 o'clock) in the valley denoted by the figures 12, 13, 14, 15, 16 and 17, representing New Orleans, St. Louis, St. Paul, Chicago, Galveston and Kansas City. Within all the space comprised by the mountain region, indicated by the figures 18 and 19—Denver and Salt Lake City, it will be two hours before noon of the Atlantic region—or 10 o'clock, while in the Pacific region, 20 and 21, representing San Francisco and Victoria, it will be three hours before noon by the Atlantic time, or 9 o'clock. As a general rule, no local time will be allowed to differ more than thirty minutes from the standard. Comparison of the tables which we print in this (1884) edition in place of those on pages 562 and 563 of the American section of the 1883 edition, will show the difference between local or "sun" time and "standard" time at various points in the United States and Canada. It has been found impossible to embrace the whole country in strict lines of demarcation shown by the maps, viz. : at longitudes 67½, 82½, 97½ and 112½, inasmuch as many railroads run through two sections, and some run through three ; hence an arbitrary selection of the different times has been adopted by certain railroads. For instance, the Lake Shore railroad uses Central time throughout its whole length from Buffalo to Cleveland, crossing the theoretical line at a point half way between Cleveland and Toledo, Ohio ; all the roads east of Pittsburgh, Pa., run by Eastern time, all west by Central time, and all roads in Georgia run by Central time, although both Ohio and Georgia are half and half in the Eastern and Central sections. The five times correspond as near as possible with the local time of Sydney, C.B. (Intercolonial), Philadelphia, Pa. (Eastern), St. Louis, Mo. (Central), Denver, Col. (Mountain), and Carson City, Nevada (Pacific).

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| Knight's Mechanical Dictionary, First and Second Edition, 4 vols. (cloth)             | ... | ... | ... | ... | ... | ... | ... | ... | ... |
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| Meyer's Telegraphic Cipher Code Books                                                 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
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TABLE OF C.G.S., AND ENGLISH UNITS.

BY BRADLEY A. FISKE, U.S.N. 59, ASTOR HOUSE, NEW YORK.

1 gramme = 15.432 grains.  
1 dyne = 981 dynes.  
1 erg = 445,900 dynes (approximate).  
1 erg = .00000224 + lbs. (approximate).  
1 erg = .0648 grammes.  
1 erg = 39.37 inches.  
1 metre = 1093.6 yards.  
1 dyne-centimetre.  
1 pound = 13,586,850 ergs of work = 13 +  
ergs.  
1 pound = .1385 kilogrammètres.  
1 gramme = 98.1 meg. ergs.  
1 gramme = 7.220 foot pounds.  
1 erg = 10<sup>-8</sup> c.g.s units.  
1 erg = 10<sup>-9</sup> " "  
1 erg = 10<sup>-11</sup> c.g.s. units.  
1 pound = 10<sup>-11</sup> " "  
1 erg = 10<sup>-9</sup> " "  
1 erg = 42 × 10<sup>8</sup> ergs = 1 gramme water

1 Eng. heat unit = 772 foot pounds = 1 lb. water  
1° F.  
1 Horse-power = 550 foot pounds per second.  
1 Horse-power = 33,000 foot pounds per minute.  
1 Horse-power = 1,980,000 foot pounds per hour.  
1 Horse-power = 76 kilogrammètres per second  
English measure.  
1 Horse-power = 75 kilogrammètres per second,  
French measure.  
1 Horse-power = 7,460 meg. ergs per second,  
English measure.  
1 Horse-power = 7,357.5 meg. ergs per second,  
French measure.  
Unit of electrical work = volt-coulomb or vomb  
(suggested).  
1 Vomb = .737 foot pounds.  
1 Meg. vomb = 737,000 foot pounds.  
Unit electrical energy = volt—ampère, or watt.  
1 Watt = 10 meg. ergs per second = 1/746 kilo-  
grammètres per second = 1/746 horse-power.

**The Franklin Institute of the State of Pennsylvania**

FOR THE

**Promotion of the Mechanic Arts.**

**INTERNATIONAL ELECTRICAL EXHIBITION IN PHILADELPHIA**

*To Open Tuesday, September 2nd, 1884.*

**T**HE attention of all persons interested in the generation and application of electricity is respectfully invited to the exhibition of electricity and electrical appliances to be held in Philadelphia, United States of America, commencing on Tuesday, September 2nd, 1884, under the auspices of the Franklin Institute of the State of Pennsylvania for the Promotion of the Mechanic Arts.

From the eminent reputation of this institution, coupled with the fact that the present exhibition will be the first in America exclusively devoted to this important and progressive branch of science, the above announcement has attracted unusual interest throughout the United States, and the exhibition will undoubtedly afford an admirable opportunity of witnessing a representative display of American discovery and invention in electricity.

To increase its scientific and industrial importance, as well as to add to its attractions, it was determined shortly after its inception to give it an international character. The merits of the project having been properly represented to the Congress of the United States, an act was passed which, having received the signature of the President of the United States, has become the law.

This official recognition provides for the admission into the United States, duty free, of articles for exhibition only. The text of this act of Congress is as follows:

"WHEREAS, the Franklin Institute of the State of Pennsylvania for the Promotion of the Mechanic Arts proposes to hold an exhibition of electrical apparatus, machinery, tools, implements, and other articles used in scientific and mechanical and manufacturing business investigations, and

"WHEREAS, it is deemed desirable to promote the success of such an exhibition by reasonable encouragement, in order that it may be made useful for the promotion of knowledge, therefore, be it

"Resolved, by the Senate and House of Representatives of the United States of America in Congress assembled, That all articles that shall be imported for the sole purpose of exhibiting at the exhibition to be held by the Franklin Institute of the State of Pennsylvania for the Promotion of the Mechanic Arts, in the city of Philadelphia, in the years 1883 or 1884, be admitted without payment of duty or customs fees or charges, under such regulations as the Secretary of the Treasury shall prescribe, *provided*, that all such articles as shall be imported into the United States, or withdrawn for consumption therein at any time after such importation, shall be subject to the duties, if any, imposed on like articles by the revenue laws in force at the date of importation, and *provided*, further, that in case any article imported under the provisions of this joint resolution shall be withdrawn for consumption, or shall be sold or otherwise disposed of, payment of duty as required by law, all the penalties prescribed by the revenue laws shall be applied and enforced against such articles, and against the persons who may be guilty of such withdrawals or sales."

It remains only to add, at the present time, that no effort will be spared by the Franklin Institute to secure a large and important representation of the progress of foreign countries, and that the most liberal provisions will be made to place European and American exhibitors on a fair and equal footing.

The subject of electricity and its applications is at present attracting an unusual amount of attention, and the exhibition side by side of the best achievements of Europe and America cannot fail to be in the highest degree instructive.

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SPECIFICATIONS OF PATENTS ISSUED SINCE MAY 30, 1865, COMMENCING WITH NO. 47,911 HAVE BEEN PRINTED UP TO THIS DATE; also the classes of Electricity, Fishing and Trapping, and the sub-classes of Cartridges, Hand Guns, Machine Guns, Magazine Guns, Revolvers, Self-Binders, and Time Locks, previously patented.

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# UNITED STATES ELECTRICAL PATENT STATISTICS.

PREPARED FROM THE OFFICIAL RECORDS BY GEORGE CUMMING.

The first three United States electrical patents were granted to D. Harrington, for therapeutics, electrodes, and body wear, and were not numbered. They bear date July 22nd, 1833; January 27th, 1834; and March 31st, 1835. The first numbered electrical patent, 132, follows February 25th, 1837, granted to T. Davenport for motors. S. F. B. Morse's first patent, 1647, for telegraphs, was the ninth electrical patent, bearing date, June 20th, 1840. It will be a surprise to many to learn that the Wheatstone-Cooke patent, 1622, for telegraphs, ante-dates Morse's just ten days. The ball once started rolling, and assumed magnificent proportions until now, after fifty years, electricity is looked upon as the most important branch of the United States patent office, being divided into seventy sub-classes, embracing the electric light, telegraphs, telephones, alarms, clocks, conductors, batteries, gas lighting, telegraphing rods, insulators, meters, motors, signals, underground lines, etc. The number of patents to date (December, 1883) being over 5,000. It is interesting to note how few first inventors there are who share the credit with the general public for their originality. This is owing no doubt in part to the time being ripe for certain inventions, in part to the fact that later adapters are inclined to be more busy in asserting themselves, and also largely to the fact that whoever puts in the "missing link" gets the one who gets the credit for complete invention. We see this most clearly in the case of the electric light, duplex and quadruplex telegraphy, and in special instruments like repeaters, relays, keys, and indicators, &c. The first inventor being rarely if ever known to the public, the first electric light patents were granted to Collier and Baker for arc (20,255), May 18th, 1858; to Gardiner and Blossom (20,706), June 29th, 1858, for incandescent; and to D'Ivernois (114,652), May 9th, 1871, for systems, &c. The following list shows the dates, numbers, and names of the first patents for a few of the special instruments, applications, and devices:—

|                      |       |         |                      |       |                   |
|----------------------|-------|---------|----------------------|-------|-------------------|
| Magneto Electric     | .. .. | 8,843   | Gonnenburg & Richten | .. .. | May 30th, 1852.   |
| Meters               | .. .. | 125,586 | G. Little            | .. .. | April 9th, 1872.  |
| Telephonic Calls     | .. .. | 199,007 | T. A. Watson         | .. .. | Jan. 8th, 1878.   |
| "    Details         | .. .. | 217,561 | L. A. Watson         | .. .. | July 15th, 1879.  |
| Electric Telephones  | .. .. | 199,141 | E. Berliner          | .. .. | Jan. 15th, 1878.  |
| Mechanical           | .. .. | 205,864 | J. R. Holcombe       | .. .. | July 9th, 1828.   |
| Magnetic             | .. .. | 174,465 | A. G. Bell           | .. .. | Mar. 7th, 1876.   |
| Telephonic Systems   | .. .. | 40,346  | J. Lewis             | .. .. | Oct. 20th, 1863.  |
| Automatic Telegraphs | .. .. | 5,957   | A. Bain              | .. .. | Dec. 5th, 1848.   |
| Dial                 | .. .. | 6,040   | L. G. Curtis         | .. .. | Jan. 16th, 1849.  |
| Duplex               | .. .. | 21,329  | M. G. Farmer         | .. .. | Aug. 31st, 1858.  |
| Dynamo               | .. .. | 223,845 | S. D. Field          | .. .. | Jan. 27th, 1880.  |
| Multiplex            | .. .. | 136,369 | M. Gally             | .. .. | Mar. 4th, 1873.   |
| Perforating          | .. .. | 18,149  | J. P. Humaston       | .. .. | Sep. 8th, 1857.   |
| Printing             | .. .. | 4,464   | R. E. House          | .. .. | April 18th, 1846. |
| Quadruplex           | .. .. | 170,963 | J. Olinsted          | .. .. | Dec. 14th, 1875.  |
| Telegraph Relays     | .. .. | 20,930  | E. F. Barnes         | .. .. | July 20th, 1858.  |
| "    Repeaters       | .. .. | 7,769   | C. G. Bulkley        | .. .. | Nov. 12th, 1850.  |
| Electric Clocks      | .. .. | 9,279   | M. G. Farmer         | .. .. | Sep. 21st, 1852.  |
| Thermometers         | .. .. | 37,875  | A. Ross              | .. .. | Mar. 10th, 1863.  |
| Batteries            | .. .. | 2,521   | P. Coad              | .. .. | Mar. 28th, 1842.  |
| Underground Lines    | .. .. | 96,641  | S. F. Van Choat      | .. .. | Nov. 9th, 1869.   |
| Conductors           | .. .. | 3,316   | S. F. B. Morse       | .. .. | Oct. 25th, 1846.  |
| Insulators           | .. .. | 4,807   | R. L'Anglais         | .. .. | Oct. 7th, 1846.   |
| Fire Telegraphs      | .. .. | 4,691   | A. Smith             | .. .. | July 24th, 1846.  |
| Rheostats            | .. .. | 122,267 | G. Little            | .. .. | Dec. 26th, 1871.  |
| Keys                 | .. .. | 35,694  | E. B. & J. G. Lake   | .. .. | June 24th, 1862.  |
| Transmitters         | .. .. | 5,612   | E. R. Roe            | .. .. | May 30th, 1848.   |
| Electrolysis         | .. .. | 4,012   | A. W. Thompson       | .. .. | April 26th, 1845. |
| Induction Coils      | .. .. | 5,507   | B. H. & G. H. Horn   | .. .. | April 11th, 1848. |
| Gas Lighting         | .. .. | 18,945  | S. Gardiner, junr.   | .. .. | Dec. 22nd, 1857.  |

In regard to the number of patents taken out by any individual, T. A. Edison is so far in advance of all that others sink in comparative insignificance. Mr. Edison has covered the whole field of electricity, having obtained patents for nearly every form of instrument, system, and appliance worth protection. His first electrical patent (90,649), and probably his first application for electrical honours, was granted for indicators, and bears date of June 1st, 1869. Up to July 1st, 1882, he had received 227 electrical patents, and the number of pending applications would indicate that the rumour to the effect that his great ambition is to obtain 1,000 patents, would seem to bear some evidence on its face.

# ELECTRICAL PATENTS, ISSUED IN THE UNITED STATES 1882 AND 1883.

A printed copy of the specification and drawing of any patent to the annexed lists, also of any patent issued will be furnished post paid on receipt of TWENTY-FIVE CENTS, by any of the patent solicitors whose names appear in the Directory; or they may be ordered through the American Agents, Messrs. CUMMING & BRINKENHOFF, 215, East 22nd street, New York City. In ordering please state the number and date of the patent desired.

## 1882—JANUARY 3RD.

- 252,002 Polarization, or Secondary Electric Battery C A Faure, Paris, France.  
 251,997 Electric Block Signal Apparatus Oscar Garrett Boston, Mass.  
 251,748 Automatic Regulator for Electric Light Systems Wm I. Voelker, Morton, Pa.  
 9,999 Support for Electric Wires and Lamps in Cities Wm C. Adison, Philadelphia, Pa.  
 251,970 Coating and Insulating Wire for Electrical Purposes Jas Taylor, Ansonia, Ct.  
 251,991 Electric Governor and Indicator for Fluid Pressure Brakes E S Batchelor, Pittsburgh, Pa.  
 251,774 Electric Lamp. St. George Lane Fox, London, England.  
 251,740 Apparatus for Manufacturing Incandescent Lamps and Carbons Wm I. Voelker, Morton, Pa.  
 252,004 Automatic Circuit Breaker for Secondary Batteries Jas A Maloney and Franz Burger, Washington, D.  
 251,997 Signalling and Circuit-connecting Apparatus T A Watson, Everett, Mass.  
 251,729 Telegraph Cable Terminal Wm R Patterson, Chicago.  
 251,965 Automatic Signalling-Circuit for Telephone Exchanges Chas E. Scribner, Chicago, Ill.  
 251,810 Telephone Signal G Lee Anders, London, England.  
 251,794 Magneto-Electric Machine for Telephone Signalling G Lee Anders, London, England.  
 251,999 Battery Telephone Transmitter Chas E. Scribner, Chicago, Ill.  
 251,777 Electric Gas-Lighter C D. Haskins, N Y.

## JANUARY 10TH.

- 252,175 Striking Mechanism for Electric Belts G E Bowers, Fitchburg, Mass.  
 252,095 Burglar Alarm J Giles, South Bend, Indiana.  
 252,200 Cut-out for Burglar Alarms Wm R Sawyer, Providence, R.I.  
 252,249 Electric Cable W J Phillips, Philadelphia, Pa.  
 252,174 Electrical Illumination Chas E Bush, New Haven Ct.  
 252,242 Electrical Signal Transmitter G S Mott, Philadelphia, Pa.  
 252,254 Electrical Signaling Apparatus C E Buell, New Haven Ct., and J F Buell, Woburn, Mass.  
 252,238 Electro Magnetic Brake L W Gow and Hugo Walter, Cincinnati, O.  
 252,261 Insulated Electrical Conductor W H Sawyer, Providence, R.I.  
 252,262 Insulated Electrical Conductor W H Sawyer, Providence, R.I.  
 252,210 Electric Lamp A G Holcomb, Granby, Ct.  
 252,037 Electric Lamp R M Hunter, Philadelphia, Pa.  
 252,125 Electric Lamp R R Moffat and S Chester.  
 252,182 Electric Lamp A J B Lancel Paris, France.  
 252,193 Electrical Railway E H Cowles, Cleveland, O.  
 252,265 Telephone J H Rogers, Washington, D C.  
 252,284 Telephone E T Greenfield, Brooklyn, N Y.  
 252,160 Compound Telephone Thos A Watson, Everett, Mass.  
 252,142 Electric Speaking Telephone A W Rose and C A Cheever, New York.  
 252,259 Telephone Exchange Circuit C W Rose, Columbus O.  
 252,257 Telephonic Apparatus and Circuit Jas H Rogers, Washington, D C.  
 252,024 Mechanical Telephone G K Farrington and H C Farrington, Kirksville, Mo.  
 252,132 Telephonic Transmitter Jos Olmsted, N Y.  
 252,206 Carbon of Telephone-Transmitter C F Scribner and G D Clark, Chicago, Ill.  
 252,257 Telephonic Apparatus and Circuit J H Rogers, Washington, D C.  
 252,141 Electric Telephony A W Rose, New York.  
 252,189 Electrical Apparatus for Medical Use. Jno Butler, New York.

## JANUARY 17TH.

- 252,361 Apparatus for the Preparation of Carbon Conductors I. K Bohne, New York.  
 252,361 Process of Manufacturing Carbons L H Latimer, New York.  
 252,347 Circuit-Regulating Device for Electric Lights C M Ball, Troy, New York.  
 252,349 Dynamo-Electric Machine Chas A Hussey, New York.  
 252,406 Commutator for Dynamo-Electric Machines Addison G Waterhouse, New York.  
 252,400 Automatic Electric Signal Printing Register Frank B Wood and Hy I Brower, New York.  
 252,353 Automatic Electric Signaling Apparatus H J Brower, Brooklyn, and Fk B Wood, New York.  
 252,365 Electrical Switch Board Geo B Odell, Chicago.  
 252,364 Electric Lamp M G Farmer, Newport R.I.  
 252,361 Electric Lamp H S Maxon Brooklyn, N Y.  
 252,362 Electric Lamp H S Maxon Brooklyn, N Y.  
 252,360 Electric Lamp J Olmsted, New York.  
 252,357 Electric Lamp J Olmsted, New York.  
 252,404 Carbon Rods for Electric Lamps Addison G Waterhouse, New York.  
 252,367 Electric Signal for Railways Hippolyte Leblanc and Eugene V A. Leducan, Paris, France.  
 252,345 Electric Railway Signal Chas D Foshie, Boston, Mass.  
 252,402 Telegraphic Recorder G S Mott Philadelphia, Pa.  
 252,404 Telegraphic Recorder G S Mott Philadelphia, Pa.  
 252,412 Telephone T A Edison, Menlo Park N Y.  
 252,421 Electric Transmitter Jas H Rogers, Washington, D C.  
 252,421 Switch for Telephone Exchanges H W Hixenbaugh, Providence, R.I.  
 252,420 Multiple Switch Board, for Telephone Exchanges Leroy B Fennan, Chicago, Ill.  
 252,372 Electric Call for Telephone and other purposes Wm C Lockwood, Brooklyn.  
 252,311 Anti-Induction Cable W R Patterson, Chicago, Ill.

# BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

JANUARY 24TH.

Electric Cable. R. S. Waring, Pittsburgh, Pa.  
Electric Lighting Apparatus. M. G. Farmer, Newport, R.I.  
Electric Lighting System. M. G. Farmer, Newport, R.I.  
Short-Circuiting Switch, for Dynamo-Electric Machines. Wm. Hockhausen, New York.  
Magneto-Electric Machine. Wm. Hockhausen, New York.  
Polarity Protector, for Dynamo-Electric Machines. Wm. Hockhausen, New York.  
Electric Signaling Apparatus. H. Pickford and H. S. Gregory, Chelsea, Mass.  
Automatic Fire Alarm. Isidor Kitz, Cincinnati, Ohio.  
Electrical Gas Burner. J. Redding, Malden, N.Y.  
Electric Gas Lighting. J. Redding, Malden, N.Y.  
Insulator for Telegraph Wires. C. L. Gore, New York.  
Electric Lamp. H. S. Maxim, Brooklyn, N.Y.  
Vulcanizing India Rubber and Gutta Percha Coverings and Contings of Telegraphic Cables. H. A. Clark, Boston, Mass.  
Automatic Time Recorder, for Telegraph Signal Boxes. H. W. Pope, Elizabeth, N.J.  
Compound Telephone. Geo. Lee Anders, London, England.  
Transmitter for Telephones. S. H. Bartlett and H. E. Waite.  
Voltage Battery. A. F. W. Partz, Philadelphia, Pa.

JANUARY 31ST

Burglar Alarm. S. D. Lake, Jersey City, N.J.  
Electric Lighting Apparatus. J. B. Fuller, New York.  
Electric Lamp. J. B. Fuller, New York.  
Apparatus for Immersing Galvanic Battery Plates. A. J. Holt, Grand Rapids, Mich.  
Electric Lamp. H. B. Sheridan, Cleveland, Ohio.  
Electric Apparatus for Working Railway Brakes. F. A. Achard, Paris, France.  
Duplex Telegraph. C. L. Huxtingham, Elizabeth, N.J.  
Duplex Telegraph. H. Van Hovenbergh, Elizabeth, N.J.  
Secret Message Telegraph. A. F. Johnson and F. B. Johnson, New York.  
Instrument for Preparing and Transmitting Secret Telegraph Messages. A. F. and F. B. Johnson, New York.  
Quadruplex Telegraph. S. D. Pond, New York.  
Secret Printing Telegraph. A. F. Johnson and F. B. Johnson, Brooklyn, N.Y.  
Secret Printing Telegraph. A. F. Johnson and F. B. Johnson, Brooklyn, N.Y.  
District Telegraph System. C. F. McCulloch, Baltimore, Md.  
Electrical Visual Indicator. C. H. Pond, New York.  
Self-Adjusting Relay for Printing Telegraph. S. M. Plush and W. P. Phelps, Philadelphia, Pa.  
Apparatus for Preparing and Transmitting Secret Telegraph Messages. A. F. and F. B. Johnson, Brooklyn, N.Y.  
Telephone Exchange Apparatus. Geo. Lee Anders, London, England.  
Insulator and Protector for Underground Lines. W. A. French, Camden, N.J.  
Laying Subterranean Conductors. Hy. E. Lane, Baltimore, Md.  
Electric Wire Fence. J. H. Connelly, Pittsburgh, Pa.  
Combined Electric Lamp and Generator. Elz. Morey, New York.

FEBRUARY 7TH.

Electric Machine, Dynamo. Chas. A. Hussey, New York.  
Electric Store Boxes and Lights, Regulator for. H. B. Sheridan, Cleveland, Ohio.  
Insulation of Electrical Conductors. H. C. Strong, Chicago.  
Interlocking Switch and Signal Mechanism. E. H. Johnson, Philadelphia, Pa.  
Lamp, Electric. A. G. Holcomb, Danielsonville, Ct.  
Lamp, Electric. W. M. Thomas, Cincinnati, Ohio.  
Lamp, Electric. A. G. Waterhouse, New York, N.Y.  
Lamp, Electric. A. G. Waterhouse, New York, N.Y.  
Lamps, Carbon-holder for Electric. John Tregoung, New York, N.Y.  
Magneto-Electric Machine. L. Herman, Union, N.J.  
Railway Trains, Electric Apparatus for Producing Signals and Lights upon. E. T. Starr, Philadelphia, Pa.  
Telegraph Apparatus, Duplex re-issued. Jos. B. Stearns, Boston, Mass.  
Telegraph Apparatus, Duplex re-issued. Jos. B. Stearns, Boston, Mass.  
Telegraph Apparatus, Duplex re-issued. Jos. B. Stearns, Boston, Mass.  
Telegraph Tube, Insulating. J. L. Garber, Greenvale, Ohio.  
Telegraphs, Electric Coupling for Train. E. D. Parker, Sedalia, Kansas.  
Telephone Exchange System and Apparatus. G. B. Scott, Brooklyn, N.Y.

FEBRUARY 14TH.

Candle for Electric Lighting. Jean Baptiste Java Mignon, Paris, France.  
Clock, Secondary Electric. D. F. Sweet, Hastings, Mich.  
Electric Light. A. L. Airey, Cleveland, Ohio.  
Electric Lights, etc. Apparatus for Elevating Poles for. J. D. A. Mensung, Rochester, N.Y.  
Electric Lighting Apparatus. M. G. Farmer, Newport, R.I.  
Electrical Conducting Wires with Metallic Armor, Machine for Covering. W. Halkyard, Providence, R.I.  
Gauze Battery. A. M. G. Schlot, Denver, Col.  
Lamp, Electric. A. L. Airey, Cleveland, Ohio.  
Lamp, Electric. A. M. G. Schlot, Denver, Col.  
Lamp, Electric. H. B. Sheridan, Cleveland, Ohio.  
Lamp, Electric. W. L. Voelker, Morton, Pa.  
Lamp, Incandescent Electric. W. L. Voelker, Morton, Pa.  
Lamp, Incandescent Electric. W. L. Voelker, Morton, Pa.  
Magneto-Electric Machine. Jno. B. Blair, Chicago, Ill.  
Magneto-Electric Machine. M. A. Hardy, Newport, R.I.  
Railway Signaling Apparatus. F. L. Pope, Hartford, Ct.  
Telegraph Signal Box, District and Alarm. G. M. Phelps, Brooklyn, N.Y.  
Telegraph Wires, Supporting. Samuel Turner, Cincinnati, Ohio.  
Telephone Receiver. G. L. Anders, Boston, Mass.  
Telephone Receiver. S. H. Bartlett and H. E. Waite, Bridgeport, Ct.  
Telephone Relay. H. E. Waite, Bridgeport, Ct.  
Telephone Signal Generator. J. F. Gililand, Indianapolis, Indiana.  
Telephone Transmitter. S. M. Allen, Duxbury, Mass.

FEBRUARY 21ST.

Electric Machine, Dynamo. W. E. Sawyer, New York.  
Electric Wires, Safety Device for. Samuel M. Plush, Philadelphia, Pa.  
Electro-Magnetic Relay. C. A. Randall, New York.  
Lamp, Electric. H. S. Maxim, Brooklyn, N.Y.  
Lamp, Electric. G. W. Sawyer, New York, N.Y.



# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER

- 253,954 Lamp, Electric E. Thomson, N. Britain, Ct.  
 253,955 Lantern for Electric and other Lights L. Sturinger, New York, N. Y.  
 253,957 Telegraphic Apparatus B. Thompson and C. Selden, Toledo, Ohio.  
 254,001 Telegraphic Receiving Instrument G. Smith, Astoria, N. Y.  
 253,853 Telephone Call Register W. I. Denyer and W. W. Sawyer, Springfield, Mass.  
 253,812 Telephone Station Apparatus G. W. Coy, Milford, Ct.  
 253,341 Telephone Switch J. B. Odell, Chicago, Ill.  
 253,977 Telephone Transmitter, Carbon G. D. Clark, Chicago, Ill.  
 253,962 Watchman's Electric Register G. G. Weitz, Boston, Mass.

## FEBRUARY 28TH.

- 254,336 Burglar Alarm, Electric M. H. Kerner, New York  
 254,389 Electrical Switch Board C. E. Scribner, Chicago, Ill.  
 254,261 Lamp, Electric F. H. Beers, Newark, N. J.  
 254,258 Telegraph Line, Underground, D. Brooks, Philadelphia, Pa.  
 254,257 Telegraph, Quadruplex S. D. Fall, New York  
 254,220 Telegraph, Sextuplex F. W. Jones, New York  
 254,356 Telephone Line Signal Call F. E. Luchanood, Springfield, Mass.  
 254,190 Telephone Transmitter E. Berliner, Boston, Mass.

## MARCH 7TH.

- 254,009 Burglar Alarm, Electric H. C. Roome, Jersey City, N. J.  
 254,616 Electric Light Regulator J. H. Guest, Brooklyn, N. Y.  
 254,597 Electric Meter C. V. Boys, Winc, England  
 254,676 Galvanic Battery A. Michaud, Paris, France  
 254,610 Insulator for Telegraph Wires W. H. Capewell, Philadelphia, Pa.  
 254,611 Lamp, Electric J. H. Guest, Brooklyn, N. Y.  
 254,780 Lamp, Electric Incandescent E. A. Scribner, Newark, N. J.  
 254,702 Lamp Regulator, Electric H. B. Brewer and A. G. Waterhouse, Sacramento, California.  
 254,672 Lamps, Carbon for Electric H. S. Maxim, Brooklyn, N. Y.  
 254,764 Lamps, Rheostat for Electric P. H. Fox, New York  
 254,743 Magnet, Electro A. G. Waterhouse, New York  
 254,523 Reflector and its support, Electric Light W. Wheeler, Concord, Mass.  
 254,522 Reflectors, Supporter for Electric Light W. Wheeler, Concord, Mass.  
 254,611 Telegraph Circuit Fire Alarm R. Carter, New York  
 254,573 Telephone Lines, Individual Signalling Apparatus for H. D. Stearn, Mill River, Mass.  
 254,642 Telephonic Receiving Instrument W. B. Hale, Washington, D. C.

## MARCH 14TH.

- 251,780 Belt, Galvanic A. A. Baldwin, Iona, Mich.  
 255,096 Electrical Switch-board T. W. Vail, Boston, Mass.  
 251,948 Electricity Distribution of Energy by S. L. Fox, London, England.  
 251,912 Lamp, Electric V. W. Blanchard, New York  
 251,977 Telegraphic Transmitter, Automatic F. L. Hutchinson, New York  
 255,001 Telephone Exchange Circuit and Apparatus J. I. Babu, San Francisco, California

## MARCH 21ST.

- 255,303 Carbon Conductors, Manufacture of H. S. Maxim, Brooklyn, N. Y.  
 255,290 Electric Drill C. E. Ball, Philadelphia, Pa.  
 255,241 Electric Machine, Dynamo E. Weston, Newark, N. J.  
 255,396 Electric Machine, Dynamo E. Weston, Newark, N. J.  
 255,167 Electric Machines, Armature for Dynamo G. H. Brown, New York  
 255,311 Electric Machines, Regulator for Dynamo H. S. Maxim, Brooklyn, N. Y.  
 255,310 Electric Machines, Speed Regulator for Dynamo H. S. Maxim, Brooklyn, N. Y.  
 255,306 Electrical Meter H. S. Maxim, Brooklyn, N. Y.  
 255,307 Electric Meter H. S. Maxim, Brooklyn, N. Y.  
 255,308 Electrical Meter H. S. Maxim, Brooklyn, N. Y.  
 255,124 Electricity, Apparatus for Signaling by J. W. Stover, Newton, Mass.  
 255,148 Lamp, Electric L. E. Curtis and F. Weston  
 255,277 Lamp, Electric C. H. Cunningham, Newcastle-upon-Tyne, England.  
 255,110 Lamp, Electric A. G. Holsenbeck, New York  
 255,171 Lamp, Electric A. G. Holsenbeck and I. R. Colborne, New York  
 255,304 Lamp, Electric H. S. Maxim, Brooklyn, New York  
 255,305 Lamp, Electric H. S. Maxim, Brooklyn, New York  
 255,186 Lamp, Electric J. Obert, New York  
 255,223 Lamp, Electric A. G. Waterhouse, New York  
 255,363 Lamp, Electric E. Weston, Newark, N. J.  
 255,225 Lamp, Electric E. Weston and L. E. Curtis, Newark, N. J.  
 255,218 Lamp, Incandescent Electric W. L. Voelker, Morton, Pa.  
 255,202 Lamps, Absorbent for Electric E. Weston, Newark, N. J.  
 255,212 Lamps, Glass Supporter for Electric J. Truening, Philadelphia, Pa.  
 255,365 Magnet, Electro E. Weston, Newark, N. J.  
 255,248 Secondary Batteries, Charging C. E. Buell, New Haven, Conn.  
 255,216 Secondary Batteries, Charging and Discharging C. E. Buell, New Haven, Conn.  
 255,342 Telegraph Automatic C. A. Randall, New York  
 255,295 Telegraph, Quadruplex F. W. Jones, New York  
 255,673 Telegraph Relay and Supporter for Instrument T. R. Woodfill, Aurora, Ill.  
 255,378 Telegraphic Instrument Protector M. D. Connolly, Philadelphia, Pa.  
 255,354 Telephone H. S. Thornberry, Waukegan, Massachusetts  
 255,174 Telephone, Acoustic J. A. Lakin, Westfield, Mass.  
 255,371 Telephone Circuits, Utilizing Secondary Batteries C. E. Buell, New Haven, Conn.  
 255,178 Telephone Electric J. P. Freeman, Chicago, Ill.  
 255,170 Telephone Electric J. P. Freeman, Chicago, Ill.  
 255,162 Telephone Electric J. P. Freeman and J. P. Freeman, Chicago, Ill.  
 255,343 Telephone Relay C. A. Randall, New York  
 255,249 Telephone System E. Berliner, Boston, Mass.

## MARCH 28TH.

- 255,881 Electrical Apparatus, Device for Connecting Wires W. Paul, Ansonia, Ct.  
 255,697 Galvanic Battery W. A. Chubb and F. Shaw, Englewood, N. J.  
 255,524 Gas Lighter Electric A. Mahon and W. T. Steel, Washington, D. C.  
 255,521 Lamp, Electric C. Laver, New York  
 255,467 Lamp, Electric C. W. Smith, Green Arden, Kent, England  
 255,465 Lamp, Incandescent Electric J. P. Freeman, Chicago, Ill.  
 255,140 Magnet, Armature for Electric C. C. Waterhouse, Newark, N. J.  
 255,514 Reflector for Electric Lamps Adjustable J. D. Kelly, Brooklyn, N. Y.  
 255,628 Telegraph Multiple B. Thompson and C. Selden, Toledo, Ohio



# ERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

## APRIL 4TH.

Electric Circuits, Signalling on. D. H. and L. C. Rice, Lowell, Mass.  
Electric Generator and Motor. J. H. Bunnell, Brooklyn, N. Y.  
Electric Light Regulator. N. S. Keith, New York.  
Electric Machine-Dynamo. P. Von Hefner-Alteneck, Berlin, Germany.  
Electric Distributors, System of. E. Thomson, N. Britain, Ct.  
Insulator for Electrical Conductors. A. C. Lewis, Brooklyn, N. Y.  
Lamp, Electric. N. S. Keith, New York.  
Lamp, Electric. C. D. Jenney, South Bend, Ind.  
Lamp, Electric. J. J. Wood, Brooklyn, N. Y.  
Secondary Voltaic Cells. J. W. Swan, Newcastle, England.  
Telegraph Sounder, Mechanical. J. H. Bunnell, New York.  
Telephone. E. H. Amet and W. S. D. Hunt, La Grange, Ill.  
Telephone Exchange Apparatus. C. E. Buell, New Haven, Ct.  
Thermo-Electric Battery. A. Patterson, Idlewood, Pa.

## APRIL 11TH.

Annunciator. J. G. Arnold, Worcester, Mass.  
Clock, Electric. J. Schweizer, Soleure, Switzerland.  
Electric Machine, Dynamo. H. B. Sheridan, Cleveland, Ohio.  
Electric Machine, Dynamo. H. B. Sheridan, Cleveland, Ohio.  
Electric Machine, Dynamo. W. Wheeler, Concord, Mass.  
Electrical Carbons. Draw Plate for Preparing Fibrous Filaments. J. H. Guest, Brooklyn, N. Y.  
Electrical Carbons, Forming and Treating. J. H. Guest, Brooklyn, N. Y.  
Electrical Relay. C. Ader, Paris, France.  
Governor, Electrical. H. Linton, Alleghany, Pa.  
Magnetic-Electric Generator for Signaling Purposes. J. G. Arnold, Worcester, Mass.  
Secondary Batteries, Device for Charging and Discharging. C. E. Buell, New Haven, Ct.  
Telegraph, Chemical. W. C. Taucke, New York.  
Telegraph Line, Underground. W. D. Smith, Boston, Mass.  
Telephone, Exchange System. T. A. Watson, Everett, Mass.

## APRIL 18TH.

Switch and Signal Locking Apparatus. O. Gassett, Boston, Mass.  
St. Electric. T. W. Williams, Milwaukee, Wis.  
Clocks, Striking Device for Electric and other. A. Lemoine, Paris, France.  
Electric Light. C. P. Hoenack, New York.  
Electric Light, Carbon. J. B. King, Brooklyn, N. Y.  
Electric Light Guard. W. McDevitt, Philadelphia, Pa.  
Electric Machine, Dynamo. G. H. Bangs, New York.  
Electric Machine, Dynamo. E. Werton, Newark, N. J.  
Electric Machine, Dynamo. L. G. Woolley, Mendon, Mich.  
Electric Motor. J. D. Kiely, Toronto, Canada.  
Electric Signal Transmitter. I. King, Ansonia, Ct.  
Electro-Magnetic Motor. L. G. Woolley, Mendon, Mich.  
Galvanic Battery. G. M. Hopkins, Brooklyn, N. Y.  
Gas and Electric Lamp Fixture Combined. E. H. Johnson, New York.  
Lamp, Electric. C. P. Hoenack, New York.  
Lamp, Electric. C. T. Holloway, Baltimore, Md.  
Lamp, Electric. E. J. Houston, Philadelphia, Pa.  
Lamp, Electric. L. Sexaner, Brooklyn, N. Y.  
Lamp, Electric. E. Thomson, N. Britain, Ct.  
Lamp, Electric. L. G. Woolley, Mendon, Mich.  
ELEGGRAPH KEY. G. CUMMING, 219, EAST EIGHTEENTH-STREET, NEW YORK.  
ELEGGRAPHIC ELECTRODE. G. CUMMING AND C. M. BRINKERHOFF, NEW YORK. (See Periphery-Contact Advertisement.)  
Telegraphy, Rheostat for Multiple. M. Buell, Buffalo, N. Y.  
Telephone Repeater. I. G. Smith, Hackensack, N. J.  
Telephonic Receiver. Charles Cuttress, Duxbury, and George F. Milliken, Boston, Mass.  
Fountains and Water Mains, Electric Alarm for. W. Thompson, Cutchoque, N. Y.

## APRIL 25TH.

Electric Communication, Device for Underground. B. T. Teal, Philadelphia, Pa.  
Electric Machine, Dynamo. W. Hockhausen, New York.  
Electric Meter. C. V. Boys, Wing, England.  
Electrical Generation and Distribution, System of. H. S. Maxim, Brooklyn, N. Y.  
Electro-Magnetic Escapement Mechanism. J. M. Gardiner, Hackensack, N. J.  
Gas Lighting Apparatus, Electrical. T. H. Rhodes, Brooklyn, N. Y.  
Telegraph Wires, Apparatus for Sustaining. H. A. Chase, Lynn, Mass.  
Telephone. A. H. Hieatzman, Baltimore, Md.  
Telephone Alarm. J. F. Kettell, Worcester, Mass.  
Telephone Receiver. R. M. Lockwood, New York.  
Telephone Receiver. R. M. Lockwood, New York.  
Underground Cable-way. Hy. Casebolt, San Francisco, Cal.

## MAY 2ND.

Bell Signal, Electric Call. J. F. Kettell, Worcester, Mass.  
Burglar Alarm. W. D. Matney, Harvel, Ill.  
Electric Light Circuits, Switch for. S. Bergman, New York, N. Y.  
Electric Lighting Apparatus. E. T. Starr, Philadelphia, Pa.  
Electric Machines by the Motion of a Moving Vehicle, Mechanism for Driving Dynamo. E. T. Starr, Philadelphia, Pa.  
Electric Wires, Underground Conduit for. A. F. McGrew, San Francisco, Cal.  
Electro-Magnetic Locomotives, Wheel for. E. N. Dickerson, Jr., New York, N. Y.  
Gas Lighter, Electric. W. H. H. Whiting, Chelsea, Mass.  
Gas Lighting Apparatus, Electrical. T. H. Rhodes, Brooklyn, N. Y.  
Insulating Underground Lines. E. A. Hill, Chicago, Ill.  
Lamp, Shade Holder, Electric. S. Bergman, New York, N. Y.  
Lamp Socket, Electric. S. Bergman, New York, N. Y.  
Magneto-Electric Machines, Armature for. F. H. Beers, Newark, N. J.  
Railway Signal, Electric. C. J. Means, Boston, Mass.  
Telegraph Quadruplex. H. C. Nicholson, Kenton, Ky.  
Telephone Central Office System. G. M. Hopkins, New York, N. Y.  
Telephone Transmitter. G. M. Hopkins, Brooklyn, N. Y.

# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER

MAY 9TH.

- 257,776 Candle, Electric L. Solignac, Paris, France.
- 257,778 Electric Light E. A. Edwards, Cincinnati, Ohio
- 257,788 Electric Light Regulator N. S. Keith, New York, N.Y.
- 257,800 Electric Light Regulator J. T. Wood, Brooklyn, N.Y.
- 257,884 Insulating Conduits, Alarm for Detecting Defects in L. Finger, Milrose, Mass.
- 257,966 Magneto-Electric Machines, Commutator for A. H. Eddy, Hartford Conn.
- 257,985 Meters, etc., Electrical Device for Operating Submerged G. E. Haight, Hartford, Conn.
- 257,990 Telegraph Multiple J. W. Lush, Buffalo, N.Y.
- 257,977 Telephone J. A. Lichen, Mont-Park, N.J.
- 257,980 Telephone, Electric J. J. Freeman, Chicago, Ill.
- 257,991 Telephone, Electric T. T. Prasser and J. F. Freeman, Chicago, Ill.
- 257,991 Telephone Exchange System G. W. Gray, Milford, Conn.
- 257,991 Telephone Line Signaling Apparatus for J. G. Smith, Hackensack, N.J., and C. E. Buell, New Haven, Conn.
- 257,987 Telephone Transmitter J. F. Freeman, T. T. and H. B. Prasser, Chicago, Ill.
- 257,458 Telephone Transmission of Sound from Theatres C. Allet, Paris, France
- 257,683 Torpedo Boats, Current Controlling Device for G. E. Haight, Hartford, Conn.
- 257,684 Torpedo Boats, Device for Controlling G. E. Haight, Hartford, Conn.

MAY 16TH.

- 257,875 Electric Bath G. W. Lawson, Brooklyn, N.Y.
- 257,898 Electric Lights, Shunting Device for C. J. Van Deyo, Chicago, Ill.
- 257,909 Electric Machines, Armature for Dynamo C. E. Ball, Philadelphia, Pa.
- 257,922 Electric Machines, Commutator for Dynamo C. A. Cooley, New Britain, Conn.
- 257,900 Electric Motor and Generator Combined C. J. Van Deyo, Chicago, Ill.
- 257,918 Electric Signal R. M. Hunter, Philadelphia, Pa.
- 258,140 Electricity Lighting Cars by W. A. Stern and H. M. Byllerby, New York, N.Y.
- 258,136 Gas Lighter Electric W. D. Schaefer, Richmond, Ind.
- 257,989 Lamp Electric Arc C. J. Van Deyo, Chicago, Ill.
- 258,130 Lighting, Protecting Oil Tanks from E. G. Sackett, Knox, Pa.
- 257,989 Lighting Rod Coupling T. H. Pater, Greenastle, Ind.
- 257,980 Lighting Rod Coupling T. H. Pater, Greenastle, Ind.
- 257,991 Lighting Rod Coupling T. H. Pater, Greenastle, Ind.
- 258,152 Telegraph and Messenger Service Box C. N. Tubb, New York, N.Y.
- 258,165 Telegraph, Duplex G. S. Mott, Philadelphia, Pa.
- 257,877 Telegraph Lines J. H. Longstreet, Hoboken, N.J. and J. E. Wright, New York, N.Y.
- 258,000 Telegraph Wires, etc., Ballon Support for W. Benson, Miles City, Montana.
- 258,061 Telegraph Wires, Screw for Fastening A. J. Haviland, Fort Dodge, Iowa.
- 258,040 Telephone Transmitter C. Ewing, Washington, D.C.

MAY 23RD.

- 258,234 Annunciator Board and Circuit for Telephone Exchanges M. O. Kellogg, Hyde Park, Ill.
- 258,537 Annunciator, Electrical A. Langen, New York, N.Y.
- 258,458 Burglar Alarm P. Morin, Philadelphia, Pa.
- 258,583 Electric Motor L. Taft, Great Falls, N.J.
- 258,241 Electrophotating Apparatus for A. E. Knackmann, Astoria, New York.
- 258,210 Lamp Electric J. J. M. Tule, Pittsburgh, Pa.
- 258,214 Lamp, Electric-Arc R. R. Mott, Brooklyn, N.Y.
- 258,466 Lamp, Electric-Arc M. J. O'Sullivan, Baltimore, Md.
- 258,521 Lamp Safety Device Electric J. J. Wright, Philadelphia, Pa.
- 258,466 Telegraph, Duplex C. L. Buckingham, Elizabeth, N.J.
- 258,467 Telegraph, Duplex C. L. Buckingham, Elizabeth, N.J.
- 258,428 Telegraph Duplex F. W. Jones, New York, N.Y.
- 258,350 Telegraph, Harmonic E. J. Burdett, Boston, Mass.
- 258,210 Telegraph Line, Support for Underground T. B. Atterbury, Pittsburg, Pa.
- 258,430 Telegraph for Printing A. A. Knudson, New York.
- 258,301 Zinc for Batteries H. J. Brewer, New York, N.Y.

MAY 30TH

- 258,735 Annunciator Electrical P. F. Fisher, Detroit, Mich.
- 258,818 Clock Electric Motor for L. H. Speller, Deddington, Pa.
- 258,627 Electric Insulated Signal Apparatus C. E. Bond, New Haven, Conn.
- 258,692 Electric Insulated Signaling Apparatus C. E. Bond, New Haven, Conn.
- 258,698 Electric Machine Dynamo J. J. Houston, Philadelphia, Pa.
- 258,640 Electric Machine Dynamo F. J. Houston, Philadelphia, Pa.
- 258,881 Electric Machine Dynamo H. J. Miller, New York, N.Y.
- 258,880 Electric Machine Dynamo W. J. Parker, New York, N.Y.
- 258,561 Electric Switchboard and Plug D. Deane, Indianapolis, Ind.
- 258,861 Gals, Battery J. Kallor, Brooklyn, N.Y.
- 258,881 Glass Globe for Electric arc and other lights J. D. Miller, New York, N.Y.
- 258,519 Insulating Material for Electric Construction P. Bopel, Cortaillod, Switzerland.
- 258,881 Lamp Electric Arc C. A. Hussy, New York, N.Y.
- 258,881 Lamp Electric Arc R. J. Pratt, New York, N.Y.
- 258,184 Lamp Electric Arc F. Thomson, New Britain, Conn.
- 258,516 Lamp Electric Incandescent E. Berliner, Boston, Mass.
- 258,744 Lamp Electric Incandescent J. H. Grant, Brooklyn, N.Y.
- 258,140 Lamp Electric Incandescent T. A. B. Jones, New York, N.Y.
- 258,422 Lamp Electric Incandescent W. W. Gray, Boston, Mass.
- 258,601 Railway Switches, etc., Electric Safety Apparatus for T. A. B. Putnam, New York, N.Y.
- 258,881 Railway Ties, Fastening Connection for J. B. Low, Pulaski, N.Y.
- 258,881 Telegraph Duplex J. F. Bond, Elizabeth, N.J.
- 258,881 Telegraph Keys, Circuit Cases for J. A. Thurnemann, Oshawa, Ontario, Ca.
- 258,881 Telegraph Line, Underground and above ground H. Brucks, Philadelphia, Pa.
- 258,881 Telephone Exchanges, Switchboard C. W. Jones, C. H. Jones, Columbus, Ohio.
- 258,881 Telephone Exchanges, Signaling Apparatus for J. G. Smith, Hackensack, N.J.
- 258,681 Telephone Systems, Insulated Signaling Apparatus for C. E. Buell, New Haven, Conn.
- 258,761 Telephone Transmitter G. M. Hopkins, Brooklyn, N.Y.
- 258,881 Time Detector, Electric J. E. Richards, Cedar Keys, Fla.

JUNE 6TH.

- 258,000 Clock Electric Spring W. D. Whalen, Howell, Mich.
- 258,014 Electric Conductor Underground C. J. Bond, Philadelphia, Pa.
- 258,014 Electric Conductor, Underground C. J. Bond, Philadelphia, Pa.
- 258,014 Electric Lighting Systems W. F. Sawyer, New York, N.Y., and A. Man (residence), Brooklyn, N.Y.
- 258,014 Electric Machine, Dynamo C. E. Ball, Philadelphia, Pa.

# **L. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.**

- 1 Electric Machine, Dynamo. C. J. Van Depoele, Chicago, Ill.
- 5 Electric Push-Button. G. C. Maynard, Washington, D.C.
- 9 Electric Wires, Underground Conduit for. C. H. Goebel, Philadelphia, Pa.
- 3 Electrical Conductor, Underground. G. Richardson, Philadelphia, Pa.
- 5 Electrical Fixture. L. Stieringer, New York, N.Y.
- 4 Electrical Signaling Circuit. T. D. Lockwood, Malden, Mass.
- 1 Electrical Switch-boards, Plug for. H. W. Laland, South Framingham, Mass.
- 6 Fire Alarm Box Apparatus. J. J. Brophy, New York, N.Y.
- 7 Gas Jets, Electric Device for Turning on, Lighting and Extinguishing. A. L. Bogart, Jamaica, N.Y.
- 1 Insulation, Preparation of Materials for use in Electric. J. A. Fleming, University College, Nottingham, County of Nottingham, Eng.
- 5 Lamp Bracket, Electric. E. Weston, Newark, N.J.
- 1 Lamp, Electric. C. A. Cheever, New York, N.Y.
- 3 Lamp, Electric. H. B. Sheridan, Cleveland, Ohio.
- 4 Lamp, Electric. H. B. Sheridan, Cleveland, Ohio.
- 3 Lamp, Electric. C. J. Van Depoele, Chicago, Ill.
- 4 Lamp, Electric. E. Weston, Newark, N.J.
- 7 Lamp, Electric Arc. J. H. Guest, Brooklyn, N.Y.
- 76 Lamp, Electric Incandescent. A. Bernstein, New York, N.Y.
- 38 Lamp, Electric Incandescent. M. G. Farmer, Newport, R.I.
- 98 Lamp, Electric Incandescent. J. H. Guest, Brooklyn, N.Y.
- 17 Lamp, Electric Incandescent. E. J. Houston, Philadelphia, Pa.
- 43 Lamp, Incandescent. J. V. Nichols, Brooklyn, N.Y.
- 93 Lamp, Incandescent. E. Weston, Newark, N.J.
- 122 Lamp, Carbon for Incandescent. J. V. Nichols, Brooklyn, N.Y.
- 71 Musical Instruments, Electro-Magnetization for. C. N. Andrews, San Francisco, Cal.
- 106 Telegraph, Automatic. G. Smith, Astoria, N.Y.
- 103 Telegraph, Duplex. B. F. Dillon, Savannah, Ga., and J. W. Brown, Augusta, Ga.
- 107 Telegraph, Duplex. B. Thompson and C. Selden, Toledo, O.
- 107 Telegraphic Receiving Instrument. G. Smith, Astoria, N.Y.
- 105 Telegraphic Receiving Instrument. G. Smith, Astoria, N.Y.
- 101 Telephone. J. W. Clark, Etna, O.
- 109 Telephone Attachment. J. C. Chambers, Cincinnati, O.
- 106 Telephone, Central Office Switch. M. J. Carney, Toledo, O.
- 104 Telephonic Switch Apparatus. H. W. Cozzens, Newport, R.I.
- 103 Toy, Electric. R. N. Dyer and H. W. Seeley, New York, N.Y.
- 104 Flat Iron, Electric. H. W. Seeley, New York, N.Y.

## **JUNE 13TH.**

- 107 Candle Holder, Electric. C. A. Cheever, New York, N.Y.
- 104 Electric Circuits, Safety Device for. E. Weston, Newark, N.J.
- 105 Electric Circuits, Safety Device for. E. Weston, Newark, N.J.]
- 106 Electric Circuits, Safety Device for. E. Weston, Newark, N.J.
- 102 Electric Lighting for Railway Trains, System of. C. E. Buell, New Haven, Conn.
- 107 Electric Machine, Dynamo. E. Weston, Newark, N.J.
- 108 Electric Machine, Dynamo. E. Weston, Newark, N.J.
- 103 Electric Safety Elevator. H. B. Sheridan, Cleveland, O., and H. A. Gorn, New York, N.Y.
- 103 Electric Switch Board. T. W. Lane, Boston, Mass.
- 104 Electro-magnetic Motor. G. Little, Passaic, N.J.
- 107 Lamp, Electric Arc. F. H. Burger, Plainfield, N.J.
- 102 Lamps, Device for Suspending Electric Arc. A. G. Waterhouse, New York, N.Y.
- 109 Railway Electric. C. H. Rudd, Evanston, Ill.
- 107 Railway Signal. Magneto-Electric. J. B. and O. B. Johnson, Boston, Mass.
- 110 Telegraph Transmitter, Printing. H. Van Hoevenbergh, Elizabeth, N.J.
- 103 Telephone Call Register. I. W. See, Hamilton, O.
- 106 Telephone Circuit. G. H. Bliss, Pittsfield, Mass.
- 105 Telephone Signaling Circuit. G. H. Bliss, Pittsfield, Mass.
- 109 Telephonic and Telegraphic Signaling Apparatus. A. C. Brown and H. A. C. Saunders, London, Eng.
- 104 Magneto-Generator. T. W. Lane, Boston, Mass.
- 107 Secondary Battery. J. S. Sellon, Hatton Garden, Eng.

## **JUNE 20TH.**

- 105 Burglar Alarms, Electrical Connection for. J. A. Davis, Philadelphia, Pa.
- 109 Electric Detecting Apparatus for Watchmen. C. W. Hubbard, Boston, Mass.
- 100 Electric Detecting Apparatus for Watchmen. C. W. Hubbard, Boston, Mass.
- 101 Electric Wires, Pipe for Underground. P. J. Duggan, Boston, Mass.
- 101 Electric Machine, Dynamo. C. E. Ball, Philadelphia, Pa.
- 106 Fire Alarms, Electric Conductor for. P. A. Charpentier, Paris, France.
- 106 Lamp, Electric Arc. L. J. Gülcher, Biala, Austria.
- 103 Lamp, Incandescent, Electric. J. Jameson, Newcastle-upon-Tyne, Eng.
- 101 Medical Purposes, Electrical Apparatus for. W. Humans, Cambridgeport, Mass.
- 101 Telegraph, Telephone and other Wires, Underground Conduit for. T. J. Agnew, Philadelphia, Pa.
- 109 Telephonic Circuits, Utilizing Secondary Batteries on. C. E. Buell, New Haven, Conn.
- 107 Dispatch Tube, Electro-Magnetic. C. A. Cheever, New York, N.Y.

## **JUNE 27TH.**

- 100,029 Electric Light. P. O. Jenkins, Washington, D.C.
- 100,132 Electric Machine, Dynamo. E. A. Sperry, Cortland, N.Y.
- 100,136 Electric Machine Regulator, Dynamo. R. Thury, Geneva, Switzerland.
- 100,110 Electric Machines, Armature for Dynamo. J. J. and T. J. McTighe, Pittsburgh, Pa.
- 100,111 Electric Machines, Commutator for Dynamo. J. J. and T. J. McTighe, Pittsburgh, Mass.
- 100,067 Electrical Switch-board. T. N. Vail, Boston, Mass.
- 100,273 Insulating and Protecting Telegraph Wires, etc., Device for. W. E. Banta, Springfield, O.
- 100,288 Lamp, Electric. J. Du Shane, South Bend, Ind.
- 100,304 Lamp, Electric Arc. C. A. Hussey, New York, N.Y.
- 100,305 Lamp, Incandescent Electric. J. W. Swan, Newcastle-upon-Tyne, Eng.
- 100,347 Lamps, Apparatus for Manufacturing Carbon Filaments for Incandescent. M. M. M. Slattery, New York, N.Y.
- 100,306 Lamps, Apparatus for Suspending Electric. C. C. Jennings, Buffalo, N.Y.
- 100,308 Telegraph, Duplex. F. W. Jones, New York, N.Y.
- 100,306 Telegraphic Receiving Instrument. W. H. Markland, Brooklyn, N.Y.
- 100,180 Telephone Signaling and Receiving Apparatus. C. Ewing, Washington, D.C.



# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER

JULY 4TH.

- 260,718 Brush, Electric J W Wookley Jr, Boni Hill, Ohio.
- 260,595 Purzler, Aladdin Electric C E Chumock, Brooklyn, N Y
- 260,646 Electric Cables S Borden, Fall River, Mass
- 260,651 Electric Current Generators Theodor Thompson for C F Brush, Cleveland, O.
- 260,624 Electric Lighting F T Starr, Philadelphia, Pa, and W J Peyton, Washington, D.C.
- 260,657 Electric Machine, Dynamo C F Brush, Cleveland, O
- 260,541 Electric Machine, Dynamo J A I Crisp, Montreal Quebec, Canada.
- 260,680 Electric Machine, Dynamo C Hensler, St Louis, Mo
- 260,555 Electric Machine, Dynamo J H Irwin, Morton, Pa.
- 260,623 Electric Motors, Controlling F T Starr, Philadelphia, Pa.
- 260,518 Electric Wires, Underground Conduit for J S De Bore, Haddonfield, N.J.
- 260,511 Electric Motor J H Irwin, Morton, Pa
- 260,650 Governor for Dynamo-Electric Machines, Current C F Brush, Cleveland, O.
- 260,641 Lamp Electric Arc S Borden, Fall River, Mass
- 260,640 Lamp Electric Incandescent H J Moller, New York, N Y.
- 260,562 Lamp Switches, Indicator Electric E T Greenfield, Brooklyn, N.Y., and C. S. Bradley, New York, N.Y.
- 260,448 Pumping Apparatus Electric C C Peck and W H Chapman, Middlebury, Vt.
- 260,653 Secondary Battery C F Brush, Cleveland, O
- 260,654 Secondary Battery C F Brush, Cleveland, O
- 260,449 Telegraph Key T Burn, Chicago, Ill
- 260,667 Telephone Exchange Switch Apparatus G W Coy, Milford, Conn.
- 260,488 Telephone Transmitter H B Lytle, Boston, Mass.

JULY 11TH.

- 260,751 Clock, Electric C Gullberg, Jersey City, N.J
- 260,862 Electric Cables W Howser, Chicago, Ill
- 261,077 Electric Current System C F Brush, Cleveland, O
- 260,937 Electric Light Systems, Switch for W D Canale, Brooklyn, N Y.
- 260,866 Electric Machine, Dynamo C D Haskins, and C M. Lungren, New York, N Y.
- 261,118 Electric Apparatus, Station E B Wapman, New York, N.Y.
- 260,859 Gas Valve Battery C Finkle, Madison, Wis
- 261,043 Gas Lig for Electric J H Rhodes, Brooklyn, N Y
- 260,866 Gas Lighting Apparatus, Automatic Electric J P Turrell, Boston, Mass.
- 260,864 Gas Lighting Apparatus, Electric J P Turrell, Boston, Mass.
- 260,865 Gas Lighting Apparatus, Electric J P Turrell, Boston, Mass.
- 260,920 Lamp Electric Arc C F Brush, Philadelphia, Pa
- 260,975 Lamp Electric Arc J H Forest, Brooklyn, N Y
- 261,091 Lamp Electric Arc C D Haskins, New York, N Y
- 261,067 Lamp Electric Arc F Thompson, New Britain, Conn.
- 260,861 Lamp Current Charging Key for Electric J H Garat, Brooklyn, N Y
- 260,757 Telegraph, Automatic J Russell, Madison, N Y
- 260,884 Telephone Lines, Electric Signaling Apparatus for T D Lockwood, Malden, Mass.
- 260,885 Telephone System T D Lockwood, Malden, Mass
- 260,939 Telephone System and Apparatus C E Chumock, Brooklyn, N.Y.

JULY 18TH.

- 261,372 Bell, Electric H B Porter, Chicago, Ill
- 261,288 Commutator and Armature Wires, Coupling for J J Wood, Brooklyn, N Y.
- 261,255 Electric Bell W W Karsner, Washington, D.C
- 261,262 Electric Bell Apparatus A A Seymour, Washington, D.C.
- 261,260 Electric High Mast H A Seymour, Washington, D.C
- 261,490 Electric Lighting and Power Distributing System F T Starr Philadelphia, Pa, and W J Peyton, Washington, D.C.
- 261,263 Electric Lighting Systems, Demonstrator for H A Seymour, Washington, D.C.
- 261,260 Electric Machine, Dynamo H A Seymour, New York, N Y
- 261,261 Electric Machine, Incandescent J H Irwin, Morton, Pa
- 261,187 Electrical Switch, Amplifier, Metal Contacts T N Vail, Boston, Mass.
- 261,511 Electric Sawing, and Finishing, the Surface of Carbon C W Brown, Wakefield, Mass.
- 261,238 Gas Apparatus T Kistner, Cincinnati, O
- 261,475 Fire Extending and Alarm Apparatus W Niescher, Cleveland, O.
- 261,700 Lamp, Automatic Incandescent Electric W L Vacker, Morton, Pa.
- 261,281 Lamp Electric J J Wood, Brooklyn, N Y
- 261,281 Lamp Electric Arc C F Van Dusen, Chicago, Ill
- 261,151 Lamp Electric Electric P N Harbut, Chicago, Ill
- 261,254 Lamp Lamps, Drives for Cleaning Electric J Jamison, Newcastle-upon-Tyne, England.
- 261,269 Lamp, Incandescent H A Seymour, Washington, D.C
- 261,472 Lamp, Multiple Electric H J Moller, New York, N Y
- 261,254 Lamp, Incandescent Electric H A Seymour, Washington, D.C
- 261,261 Lamp, Carbon for Incandescent H A Seymour, Washington, D.C
- 261,307 Lamp Electric J H Irwin, Morton, Pa
- 261,129 Magnet-Electric Motor S H Bly, Chicago, Ill
- 261,100 Secondary Batteries, Apparatus for Charging and Discharging C E Buell, New Haven, Conn.
- 261,563 Secondary Batteries, Method of Charging and Discharging C E Buell, New Haven, Conn.
- 261,572 Secondary Batteries F Pender, New York, N Y
- 261,435 Secondary Batteries Crompton, London, England
- 261,181 Secondary Wires, Underground Electric Wires N T Walker, Walkers, O.
- 261,181 Telegraph, Railway Train L M Chisholm, South Hackensack, Ont
- 261,400 Telegraph, Incandescent, Automatic H Van Hoesenbergh, Elizabeth, N.J
- 261,171 Telephone Apparatus W D G. Quigley, Hackensack, Mich.
- 261,186 Telephone Switch Apparatus T N Vail, Boston, Mass.

JULY 25TH.

- 261,526 Electric Machines, Commutator for Dynamo R F Hall, New York, N Y
- 261,512 Electric Machines, Commutator for Dynamo W Haskins, New York, N Y
- 261,507 Lamp Electric Apparatus for Lighting C L Clark, and J Leigh, Manchester, County of Lancashire, England
- 261,505 Lamp Electric Arc J A Wood, Fall River, Fall River, Fall
- 261,500 Lamp Electric Arc F Haskins, New Britain, Conn
- 261,492 Lamp and Cables for the same, Making the same H S Maxon, Brooklyn, N Y.
- 261,508 Telegraph, Copper J Haskins, Buffalo, N Y
- 261,507 Telegraph, Copper J A Schuster, Brooklyn, N Y
- 261,509 Telegraph, Telephone and other Wires, Underground Conduit for J B Apple, Philadelphia, Pa



# L. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

## AUGUST 1ST.

- 1 Electric Arc Light. C. F. de la Roche, Paris, France.
- 1 Electric Battery, Thermo. A. Patterson, Idlewood, Pa.
- 2 Electric Battery, Thermo. Chemical. A. Patterson, Idlewood, Pa.
- 7 Electric Cables, Machine for Making. J. Farrell, Pittsburgh, Pa.
- 3 Electric Conductors, Manufacture of Lead-covered. J. Farrell, Pittsburgh, Pa.
- 4 Electric Conductors, Manufacture of Lead-covered. J. Farrell, Pittsburgh, Pa.
- 4 Electric Light Carbon. E. J. Brooks, East Orange, N.J.
- 5 Electric Machines, Armature for Dynamo. H. B. Sheridan, Cleveland, O.
- 5 Electric Machines, Armature for Dynamo. E. A. Sperry, Cortland, N.Y.
- 9 Electric Signal. G. W. Blodgett, Boston, Mass., and A. D. Blodgett, Newton, Mass.
- 9 Electric Wires, Underground Conduit for. S. Anderson, Philadelphia, Pa.
- 9 Electrical Switch Board and Signaling Apparatus. T. W. Lane, Boston, Mass., and F. W. Harrington, Boston, Mass.
- 7 Fire-damp Annunciator. I. Kitsee, Cincinnati, O.
- 4 Fire-damp Indicator. I. Kitsee, Cincinnati, O.
- 5 Fire-damp Indicator. I. Kitsee, Cincinnati, O.
- 6 Fire-damp Indicator. I. Kitsee, Cincinnati, O.
- 1 Lamp, Electric Arc. I. E. Watson, Louisville, Ky.
- 5 Lamp, Electric Arc. I. E. Watson, Louisville, Ky.
- 9 Magneto-Electric Machine. G. Heikel, Jersey City, N.J.
- 5 Secondary Battery. C. F. Brush, Cleveland, O.
- 5 Telegraph and Telephone Signal. W. W. Le Grande, Louisville, Ky.
- 5 Telegraph, Automatic. J. Absterdam, New York, N.Y.
- 5 Telegraph, Automatic. A. L. Parcell, Boston, Mass.
- 5 Telegraph, Automatic. A. L. Parcell, Boston, Mass.
- 5 Telegraph, Duplex. S. D. Field, New York, N.Y.
- 5 Telegraph, Electric. J. Anderson, 65, Old Broad-street, London, Eng., and B. Smith, Princes-street, Hanover-square, County of Middlesex, England.
- 9 Telephone Central Office Apparatus. C. E. Throop, Auburn, N.Y.

## AUGUST 8TH.

- 10 Burglar Alarm and Door Bell Electric. J. P. Freeman, New York, N.Y.
- 2 Chandelier, Electrical Extension. S. Bergmann, New York, N.Y.
- 10 Electric Illuminator, Incandescent. J. H. Irwin, Morton, Pa.
- 11 Electric Machine, Dynamo. J. H. Irwin, Morton, Pa.
- 14 Electric Machine, Dynamo. J. A. Jenney, Fort Wayne, Ind.
- 11 Electric Signaling Apparatus. H. W. Southworth, Springfield, Mass.
- 10 Electrical Armature. J. J. Wood, Brooklyn, N.Y.
- 10 Electrical Conductors, Conduit for. S. D. Strohm, Philadelphia, Pa.
- 12 Electrical Generators, Cooling Device for. J. H. Irwin, Morton, Pa.
- 71 Gas and Electric Light Fixture, Combined. S. Bergmann, New York, N.Y.
- 10 Gas by Electricity, Apparatus for Lighting. J. P. Tirrell, Somerville, Mass.
- 10 Lamp, Electric Arc. B. A. Johnston, Cleveland, O.
- 10 Lamp, Electric Arc. C. J. Van Depoele, Detroit, Mich.
- 10 Lamp, Incandescent Electric. J. H. Irwin, Morton, Pa.
- 10 Lamp Safety Device, Electric. J. H. Irwin, Morton, Pa.
- 10 Lamp, Support, Incandescent Electric. J. H. Irwin, Morton, Pa.
- 10 Lamp Switch, Incandescent. C. G. Perkins, New York, N.Y.
- 10 Railway Signals, Magneto-generator for. W. W. Gary, Boston, Mass.
- 10 Secondary Batteries, Making Elements for. C. F. Brush, Cleveland, O.
- 17 Sign, Electrical. J. H. Irwin, Morton, Pa.
- 10 Telegraph, Duplex. G. S. Mott, Philadelphia, Pa.
- 10 Telegraphic Fire Alarm Apparatus. A. Cand, A. H. Palmer, Utica, N.Y.
- 10 Telegraphy, Visual. J. H. Irwin, Morton, Pa.
- 10 Telephone Desk. E. W. Salisbury, Providence, R.I.
- 10 Telephone, Electric. J. P. Freeman, Chicago, Ill.
- 10 Telephone Exchange System. F. O. Vaille, Denver, Col.
- 10 Telephone Exchanges, Transferring and Calling. Implement for. L. Mann, Detroit, Mich.
- 10 Telephone Switch. S. H. Bartlett, New York, N.Y., and H. E. Waite, New York, N.Y.

## AUGUST 15TH.

- 12 Electric Machine, Dynamo. J. H. Irwin, Morton, Pa.
- 45 Electric Switch. M. D. Connolly, Philadelphia, Pa.
- 30 Electrical Conductors, Subterranean System of. T. N. Vail, Boston, Mass.
- 37 Fire Alarm and Fire Extinguisher, Combined. C. E. Buell, New Haven, Conn.
- 10 Lamp, Electric Arc. G. S. Young, Blackwall, County of Middlesex, Eng., and R. J. Hatton, Stratford, County of Essex, Eng.
- 30 Magneto-Electric Machine. C. Heisler, St. Louis, Mo.
- 15 Telegraph, Duplex. S. D. Field, New York, N.Y.
- 47 Telephone Exchange, Automatic. M. D. Connolly, Philadelphia, Pa.
- 45 Telephone Exchange, Automatic. M. D. Connolly, Philadelphia, Pa., T. A. Connolly, Washington, D.C., T. J. McTighe, Pittsburgh, Pa.
- 51 Telephone Exchanges, Circuit for Multiple Switch Boards of. C. E. Scribner, Chicago, Ill.
- 11 Telephone, Magneto. G. F. Miliken, Boston, Mass.
- 34 Telephone Transmitter. W. W. Jacques, Boston, Mass.
- 30 Telephone Transmitter. E. M. Lockwood, New York, N.Y., and S. H. Bartlett, New York, N.Y.
- 10 Time Recorders, Electrical Circuit for Watchmen. J. F. Gilliland, Indianapolis, Ind.

## AUGUST 22ND.

- 5 Chandelier, Electric. T. A. Edison, Menlo Park, N.J.
- 9 Chandelier, Electrical. S. Bergmann, New York, N.Y.
- 9 Electric Arc Light. T. A. Edison, Menlo Park, N.J.
- 9 Electric Machine, Commutator for Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.
- 9 Electric Machine, Dynamo. T. A. Edison, Menlo Park, N.J.
- 9 Electric Machine, Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.
- 9 Electric Machine, Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.
- 9 Electric Machine, Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.
- 9 Electric Machine, Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.
- 9 Electric Machine Regulator, Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.
- 9 Electric Machine Regulator, Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.
- 1 Electric Signaling Apparatus. A. D. and G. W. Blodgett, and J. P. Tirrell, Boston, Mass.
- 1 Electrical Distributing System. T. A. Edison, Menlo Park, N.J.
- 5 Incandescents, Making. T. A. Edison, Menlo Park, N.J.
- 1 Incandescents, Mold for Carbonizing. T. A. Edison, Menlo Park, N.J.

# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER

- 263,011 Lamp, Electric. A. Bernstein, Boston, Mass.  
 263,135 Lamp, Electric. T. A. Edison, Menlo Park, N. J.  
 263,257 Lamp, Electric. W. L. Vorker, Morton, Pa.  
 263,297 Lamp, Electric Arc. J. O. Mottet, Montreal, Quebec, Canada.  
 263,216 Lamp, Electric Arc. W. M. Thomas, Cincinnati, Ohio.  
 263,247 Lamp, Electric Arc. W. M. Thomas, Cincinnati, Ohio.  
 262,941 Lamps, Apparatus for Hanging and Unhanging Electric. H. G. Fuake, Springfield, Mass.  
 263,192 Lamps, Catch for Electric Arc. N. M. Carty, Brooklyn, N. Y.  
 263,130 Lamps, Manufacture of Carbons for Electric. T. A. Edison, Menlo Park, N. J.  
 263,141 Lamps, Straightening Carbons of Electric Incandescent. T. A. Edison, Menlo Park, N. J.  
 263,111 Magnet or Dynamo-Electric Machine. T. A. Edison, Menlo Park, N. J.  
 263,150 Magnet or Dynamo-Electric Machine. T. A. Edison, Menlo Park, N. J.  
 263,132 Railway Electric-Magnetic. T. A. Edison, Menlo Park, N. J.  
 263,124 Secondary Battery. N. D. Kabbili, Paris, France.  
 262,341 Telegraph Instruments, Cut out for. T. Howard, Providence, R. I.  
 262,321 Telephone, Operator's Receiving. E. Berliner, Boston, Mass.  
 262,322 Telephone System. E. Berliner, Boston, Mass.  
 262,350 Torpedoes upon Tracks, Apparatus for Placing. T. H. Huewe, Dayton, Ohio.  
 262,971 Tramway and Truck, Electrical Conducting. E. R. Moore, St. Peter, Minn.

## AUGUST 29TH.

- 263,353 Electric Motor. D. T. Piot, Great Titchfield-street, County of Middlesex, Eng.  
 263,627 Electric Wires, Conduit for. R. Thayer, Philadelphia, Pa.  
 263,380 Elevators, Electric Safety Apparatus for. G. W. Baldwin, Chicago, Ill.  
 263,651 Galvanic Battery. C. E. Reed, New Haven, Conn.  
 263,457 Gas Lighting Apparatus, Electric. G. S. Armstrong, Cambridge, Mass.  
 263,404 Lamp, Electric Arc. C. H. Foster, St. Louis, Mo.  
 263,622 Lamps, Device for Forming Loops or Terminal Wires for Electric. A. Swan, Gateshead County of Durham, Eng.  
 263,623 Lamps, Device for Forming Terminal Wires for Electric. A. Swan, Gateshead County of Durham, Eng.  
 263,394 Lamps, Manufacturing Incandescent Electric. L. F. Betts, Morton, Pa.  
 263,621 Lamps, Mold for Forming the Stems and Closing Pieces for the Bulbs or Globes of Incandescent Electric. Gateshead County of Durham, Eng.  
 263,423 Lighting Rod Stand. W. B. Munn, Collingwood, N. J.  
 263,410 Sampler, Main Line. L. H. McCallish, Richmond, Ind.  
 263,540 Telegraph Cables in Pipes, Carriage for Laying Multiple Wire. N. M. Rittenhouse, Baltimore, Md.  
 263,431 Telephone Alarm. W. Dent, Utica, N. Y.  
 263,330 Telephone Case. O. D. Hartwell, Nashua, N. H.  
 263,526 Telephone Dummy. C. R. Jenkinson, Boston, Mass.  
 263,524 Telephone Exchange System. W. W. Jacques, Boston, Mass.  
 263,551 Telephone or Telegraph Lines, Switch for Grounding. B. McCabe, C. R. Swald, and J. T. Sutton, Peoria, Ill.  
 263,407 Torpedoes, Submarine. H. F. Hicks, Minneapolis, Minn.  
 263,608 Torpedoes, Submarine Gun for Protecting. H. F. Hicks, Minneapolis, Minn.

## SEPTEMBER 5TH.

- 263,922 Burglar Alarm. F. A. Langewald, Cheshire, Mass.  
 263,917 Burglar Alarm, Electric. H. F. Nemeyer, Manassas, Pa.  
 264,012 Carbon Conductors, Apparatus for creating. H. J. Maxon, Paris, France.  
 263,810 Carbon Conductors, Manufacturing. F. Weston, Newark, N. J.  
 263,758 Carbon Pads, Baking. C. F. Brush, Cleveland, Ohio.  
 263,757 Carbon Rods, Process of and Apparatus for Straightening. C. F. Brush, Cleveland, Ohio.  
 263,895 Electric Light Regulator. F. K. Fitch, New York, N. Y.  
 263,871 Electric Machines, Regulator for Dynamos. A. de Koning, St. Petersburg, Russia.  
 263,708 Electric-Mechanical Induction Coil. T. B. Hicks, London, Ontario, Canada.  
 263,827 Lamp Bracket, Incandescent. F. Weston, Newark, N. J.  
 263,828 Lamp Bracket, Incandescent. F. Weston, Newark, N. J.  
 263,829 Lamp Bracket, Incandescent. F. Weston, Newark, N. J.  
 263,878 Lamp, Electric. T. A. Edison, Menlo Park, N. J.  
 263,801 Lamp, Electric. J. V. Nichols, Brooklyn, N. Y.  
 263,948 Lamp, Electric Arc. J. A. Mondos, Neuilly, Seine, France.  
 264,006 Lamp, Electric Arc. F. Weston, Newark, N. J.  
 263,780 Magnet-Electric Machines, Machine for Winding Armatures for. R. House and J. P. Becker, Indianapolis, Ind.  
 263,750 Secondary Battery Element. C. F. Brush, Cleveland, Ohio.  
 263,133 Telegraph, Duplex Receiving. G. D. French, New York, N. Y.  
 263,750 Telegraph System, District. C. E. Reed, New Haven, Conn.  
 263,962 Telephone Exchanges, Automatic. M. D. Connell, Philadelphia, Pa.  
 263,914 Telephone Mechanism. F. R. Shaw, Chatham, N. Y.  
 263,320 Telephone Signaling Apparatus. H. B. Lyth, Boston, Mass.  
 264,928 Telephone Transmitter. L. de Loeth Labye, Liege, Belgium.

## SEPTEMBER 12TH.

- 264,100 Bell, Polarized. C. F. Serrinier.  
 264,280 Electric Circuit Connections. F. H. Johnson, New York, N. Y.  
 264,227 Electric Machine, Dynamo. G. W. Beardslee, Brooklyn, N. Y.  
 264,228 Electric Machine, Dynamo. G. W. Beardslee, Brooklyn, N. Y.  
 264,229 Electric Machine, Dynamo. G. W. Beardslee, Brooklyn, N. Y.  
 264,230 Electric Machine, Connected for Dynamo. G. W. Beardslee, Brooklyn, N. Y.  
 264,272 Electric Motor. W. K. Freeman, Brooklyn, N. Y.  
 264,238 Electric Conductors, Computing Devices for. F. H. Johnson, New York, N. Y.  
 264,264 Electric Signaling Apparatus. W. J. Fitch, Boston, Mass.  
 264,403 Galvanic Battery. F. E. Newman, New York, N. Y.  
 264,028 Gas, Illuminating. L. D. McComb, Chicago, Ill.  
 264,328 Lamp, Electric. A. W. Mottet, Montreal, N. J.  
 264,416 Lamp, Electric. H. Schuckert, F. W. Schuckert, Leoben, Austria, and S. Schuckert, Nuremberg, Bavaria, Ger.  
 264,311 Lamp, Electric Arc. F. K. Fitch, New York, N. Y.  
 264,269 Lamp, Electric Arc. W. K. Freeman, Brooklyn, N. Y.  
 264,270 Lamp, Electric Arc. W. K. Freeman, Brooklyn, N. Y.  
 264,271 Lamp, Arc or Arc-Electric. C. E. Reed, New Haven, Conn.  
 264,372 Improved Duplex and Multiplex. F. Thompson, Buffalo, N. Y.  
 264,271 Manufacture of Brush Hairs. W. K. Freeman, Brooklyn, N. Y.  
 264,211 Secondary Battery. C. F. Brush, Cleveland, Ohio.  
 264,226 Toy, Magnetic. O. J. Dunack.

BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

SEPTEMBER 19TH

|                                                             |                                                 |                                |
|-------------------------------------------------------------|-------------------------------------------------|--------------------------------|
| Car Brake, Electrical.                                      | G. D. Paul, Orange, N. J.                       | F. A. Kumpfle, Brooklyn, N. Y. |
| Electric Current Cut-out                                    | R. J. Shuch, New York, N. Y.                    |                                |
| Electric Distribution and Translation Systems               | T. A. Edison, Menlo Park, N. J.                 |                                |
| Electric Lights and Conductors Support for                  | C. H. Van Hook, Boston, Mass.                   |                                |
| Electric Machine Dynamoelectric                             | E. W. Seimens, Berlin, Germany                  |                                |
| Electric Machine Dynamo or Magneto                          | T. A. Edison, Menlo Park, N. J.                 |                                |
| Electric Machine Dynamo or Magneto                          | T. A. Edison, Menlo Park, N. J.                 |                                |
| Electric Machine Dynamo or Magneto                          | T. A. Edison, Menlo Park, N. J.                 |                                |
| Electric Machine Dynamo or Magneto                          | T. A. Edison, Menlo Park, N. J.                 |                                |
| Electric Machine Regulator, Dynamo                          | T. A. Edison, Menlo Park, N. J.                 |                                |
| Electric Machine Regulator, Dynamo                          | T. A. Edison, Menlo Park, N. J.                 |                                |
| Electric Machine Regulator, Dynamo                          | T. A. Edison, Menlo Park, N. J.                 |                                |
| Electric Machine Regulator, Dynamo                          | T. A. Edison, Menlo Park, N. J.                 |                                |
| Electric Machine Regulator, Dynamo                          | T. A. Edison, Menlo Park, N. J.                 |                                |
| Electric Machine Regulator, Dynamo                          | T. A. Edison, Menlo Park, N. J.                 |                                |
| Electric Machine Regulator, Dynamo                          | T. A. Edison, Menlo Park, N. J.                 |                                |
| Electric Machine Regulator, Dynamo                          | T. A. Edison, Menlo Park, N. J.                 |                                |
| Electric Machine Regulator, Dynamo                          | T. A. Edison, Menlo Park, N. J.                 |                                |
| Electric Machine Regulator, Dynamo                          | T. A. Edison, Menlo Park, N. J.                 |                                |
| Electric Machine Regulator, Dynamo                          | T. A. Edison, Menlo Park, N. J.                 |                                |
| Electric Machine Regulator, Dynamo                          | T. A. Edison, Menlo Park, N. J.                 |                                |
| Electric Wire Cables, Conduit for Underground               | J. Mackintosh, Philadelphia, Pa.                |                                |
| Electrifying System of Conductors for the Distribution of   | T. A. Edison, Menlo Park, N. J.                 |                                |
| Insulating Telegraph Wires, etc., Composition of Matter for | W. O. Callender, London, England.               |                                |
| Lamp Electric                                               | W. Holzer, Menlo Park, N. J.                    |                                |
| Lamp Incandescent Electric                                  | W. Crookes, London, Eng.                        |                                |
| Lamp Incandescent Electric                                  | T. A. Edison, Menlo Park, N. J.                 |                                |
| Lamp Incandescent Electric                                  | T. A. Edison, Menlo Park, N. J.                 |                                |
| Lamp Incandescent Electric                                  | T. A. Edison, Menlo Park, N. J.                 |                                |
| Lamp Incandescent Electric                                  | T. A. Edison, Menlo Park, N. J.                 |                                |
| Lamp Incandescent Electric                                  | T. A. Edison, Menlo Park, N. J.                 |                                |
| Lamp Incandescent Electric                                  | T. A. Edison, Menlo Park, N. J.                 |                                |
| Lamp Incandescent Electric                                  | T. A. Edison, Menlo Park, N. J.                 |                                |
| Lamp Incandescent Electric                                  | T. A. Edison, Menlo Park, N. J.                 |                                |
| Lamp Incandescent Electric                                  | J. D. Mott, Menlo Park, N. J.                   |                                |
| Lamps Manufacturers of Incandescent Electric                | T. A. Edison, Menlo Park, N. J.                 |                                |
| Magneto-Electric Machine                                    | T. A. Edison, Menlo Park, N. J.                 |                                |
| Ore Separator, Electro-Magnetic                             | C. G. Burdman, Brooklyn, N. Y.                  |                                |
| Telephone Exchange System                                   | D. W. Fox, Milford, Conn.                       |                                |
| Telephone or other Circuits, Individual Cal for             | W. H. Prentice and S. H. Beckwith, Utica, N. Y. |                                |
| Voltage Battery Plate                                       | A. Brown, Brooklyn, N. Y.                       |                                |

SEPTEMBER 26TH.

Car Brake, Electric. P. V. Conover, Ivalle, Texas.  
 Carbon Points, Devices for forming Sockets for. A. Swan, Gateshead, County of Durham, Eng.  
 Electric Conductor. J. V. Nichols, Brooklyn N. Y.  
 Electric Light Carbons, Manufacture of. E. Weston, Newark, N. J.  
 Electric Generator Regulator. E. Weston, Newark, N. J.  
 Electric Machine Dynamo. G. W. Beardslee, Brooklyn N. Y.  
 Electric Machine, Automatic Cut-off for Dynamo. E. Weston, Newark, N. J.  
 Electric Motor. J. Batley, Philadelphia, Pa.  
 Electric Wires, Device for Laying and Holding Underground. H. C. Reister, Philadelphia, Pa.  
 Electric Wires, Underground Conduit for. C. H. O'Brien, Philadelphia, Pa.  
 Electric Transmission of Power, System for the. E. Weston, Newark, N. J.  
 Electrical Transmission of Power, System for the. E. Weston, Newark, N. J.  
 Electro-Magnetic Motor. E. Weston, Newark, N. J.  
 Lamp, Carbon, Incandescent. E. Weston, Newark, N. J.  
 Lamp, Electric Arc. J. R. Finney, Pittsburg, Pa.  
 Lamp, Electric Arc. J. R. Finney and L. Campbell, Pittsburg, Pa.  
 Lamp, Electric Arc. J. Olmsted, New York, N. Y.  
 Lamp, Electric Arc. E. Weston, Newark, N. J.  
 Lamp Socket, Incandescent Electric. R. F. Barnes, New York, N. Y.  
 Lamps, Carbon Conductor for Electric. E. Weston, Newark, N. J.  
 Lamps of Equal Resistance, Apparatus for Making Incandescent. H. S. Maxum, Brooklyn, N. Y.  
 Lamps, Shading Attachment for Electric Arc. E. Weston, Newark, N. J.  
 Telegraph Printing. S. M. Plush and W. P. Phelps, Philadelphia, Pa.  
 Storage Batteries, Method of and Apparatus for Filling. H. S. Maxum, Paris, France.  
 Telegraph Recorder Chemical. F. Anderson, Peekskill, N. Y.  
 Telegraph Transmitter, Automatic. F. Anderson, Peekskill, N. Y.  
 Telegraphic Performer. F. Anderson, Peekskill, N. Y.  
 Telegraphic Performer. F. Anderson, Peekskill, N. Y.  
 Telephone Exchange Systems, Signaling Mechanism for. G. W. Coy, Milford, Conn.  
 Telephone System Switch Board. J. Jepson, Westfield, Mass.

OCTOBER 3RD.

10 Electric Lighting Apparatus, Governor Valve for G. A. Talbot, Marcellus, France.  
 11 Electric Machine Regulator, Dynamo J. W. Langley, Ann Arbor, Mich.  
 12 Electro-plating Machines, Attachment to Dynamo S. M. Puffer, Detroit, Mich.  
 13 Lamp and Holder for the same Electric T. A. Edison, Menlo Park, N. J.  
 14 Lamp Electric J. H. Guest, Brooklyn, N. Y.  
 15 Lamp Electric S. Waters, London, England.  
 16 Lamp Electric Incandescent J. H. Guest, Brooklyn, N. Y.  
 17 Lamp Support, Electric W. Wheeler, Concord, Mass.  
 18 Low Water Detector, Electrical F. H. Ashcroft, Lynn, Mass.  
 19 Magnet Electric T. Cochran, Brooklyn, N. Y.  
 20 Steam Boiler Cleaners, Electrical Apparatus for F. H. Ashcroft, Lynn, Mass.  
 21 Telegraph Automatic F. Anderson, Peekskill, N. Y.  
 22 Telegraph, Automatic F. Anderson, Peekskill, N. Y.  
 23 Telegraph Printing A. W. Scheraga, Brooklyn, N. Y.  
 24 Telegraphy, Dynamo G. D'Inferville, New York, N. Y.  
 25 Telegraphy, Dynamo G. D'Inferville, New York, N. Y.  
 26 Telephone Calls Combined Key-board, Automatic Switch and Magneto-Generator for J. P. Stahler, Sandy Spring, Md.  
 27 Telephone Calls Signal Transmitter for J. P. Stahler, Sandy Spring, Md.  
 28 Telephone Local Call Instrument J. P. Stahler, Sandy Spring, Md.  
 29 Telephone, Mechanical W. E. Hathaway and W. D. Johnston, Hornellsville, N. Y.



# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER

OCTOBER 10TH.

- 265,775 Electric Arc Light. T. A. Edison, Menlo Park, N. J.  
 265,976 Electric Conductors, Preventing Flushing between. E. Thompson, New Britain, Conn.  
 265,774 Electric Lighting System. T. A. Edison, Menlo Park, N. J.  
 265,796 Electric Machine, Dynamo. T. A. Edison, Menlo Park, N. J.  
 265,853 Electric Machine, Dynamo. H. J. Muller, New York, N. Y.  
 265,779 Electric Machine, Regulator, Dynamo. T. A. Edison, Menlo Park, N. J.  
 265,790 Electric Machine, Regulator, Dynamo. T. A. Edison, Menlo Park, N. J.  
 265,781 Electric Machine, Regulator, Dynamo. T. A. Edison, Menlo Park, N. J.  
 265,782 Electric Machine, Regulator, Dynamo. T. A. Edison, Menlo Park, N. J.  
 265,783 Electric Machine, Regulator, Dynamo. T. A. Edison, Menlo Park, N. J.  
 265,784 Electric Machine, Regulator, Dynamo. T. A. Edison, Menlo Park, N. J.  
 265,858 Electric Machine, Regulator, Dynamo. J. F. Ott, Newark, N. J.  
 265,859 Electric Machine, Regulator, Dynamo. J. F. Ott, Newark, N. J.  
 265,897 Electric Machine, Regulator, Dynamo. E. Thomson, New Britain, Conn.  
 85,677 Electric Signal. I. Kitzee, Cincinnati, Ohio.  
 265,753 Electric Signaling Apparatus. J. H. Cary, Boston, Mass.  
 265,786 Electric Transmission of Power, Apparatus for the. T. A. Edison, Menlo Park, N. J.  
 265,570 Electric Transmitter. G. J. Carney and J. V. Meigs, Lowell, Mass.  
 265,861 Electrode for Batteries. I. Pitkin, Clarkswood, County of Middlesex, Eng.  
 265,764 Insulating Electrical Wires. G. A. Gage, Chicago, Ill.  
 265,737 Lamp, Electric. G. W. Beardsley, Brooklyn, N. Y.  
 265,780 Lamp, Electric. M. G. Farmer, Newport, R. I.  
 265,810 Lamp, Electric. D. N. Hubbard, Chicago, Ill.  
 265,870 Lamp, Electric Arc. J. H. Gast, Brooklyn, N. Y.  
 265,777 Lamps, Treating Carbons for Electric. T. A. Edison, Menlo Park, N. J.  
 265,778 Railway Engines, Electric-Magnetic. T. A. Edison, Menlo Park, N. J.  
 265,756 Railway Trains, Electric Signal for. J. P. Clark, Philadelphia, Pa.  
 265,757 Railway Trains, Electric Signal for. J. P. Clark, Philadelphia, Pa.  
 265,645 Telegraphs, Multiplex. B. Thompson, Buffalo, N. Y.  
 265,720 Telegraphic Cables, Compound for Insulating. S. Frost and H. Kingsford, Halifax, Nova Scotia, Canada.  
 265,789 Telegraphic Recording Instrument. S. V. Essek, Alliance, Ohio.  
 265,847 Telephone Switch. T. A. Watson, Everett, Mass.  
 265,621 Underground Conductors, Wire Support for. A. H. Marshen, Philadelphia, Pa.  
 265,774 Weber Meters, Maintaining Temperature in. T. A. Edison, Menlo Park, N. J.  
 265,912 Watchman's Electric Register. G. W. Adams, Boston, Mass.

OCTOBER 17TH.

- 265,252 Burglar Alarm. M. Decker and J. K. Denning, Chicago, Ill.  
 265,683 Electric Arc Light. E. Thompson, New Britain, Conn.  
 265,241 Electric Circuits, Cut-out for. E. Weston, Newark, N. J.  
 265,171 Electric Conductors, Conduct for Underground. W. Macintosh, Providence, R. I.  
 265,213 Electric Machine, Dynamo or Magneto. E. Weston, Newark, N. J.  
 265,241 Electrical Indicator. E. Weston, Newark, N. J.  
 265,729 Electrical Transmission of Power, System for the. E. Weston, Newark, N. J.  
 265,157 Elevators, Electric Safety Device for. R. M. Curtiss, Brooklyn, N. Y.  
 265,129 Galvanic Battery, Portable. C. Gibbs, New York, N. Y.  
 265,212 Lamp, Electric. E. Weston, Newark, N. J.  
 265,161 Lamp, Electric Arc. O. Kurtzmark, New York, N. Y.  
 265,240 Lamp, Electric Arc. E. Weston, Newark, N. J.  
 265,256 Lamps, Carbon Holder for Arc. A. G. Waterhouse, New York, N. Y.  
 265,254 Lamps, Device for Suspending Arc. A. G. Waterhouse, New York, N. Y.  
 265,187 Lamps, Manufacture of Incandescent Electric. J. V. Nichols, Brooklyn, N. Y.  
 265,65 Lightning Rod, Joint or Coupling. C. E. Ball, Philadelphia, Pa.  
 265,235 Magneto or Dynamo Electric Machine. A. G. Waterhouse, New York, N. Y.  
 265,627 Railway Signal, Magnetic-Electric. W. W. Cary, Boston, Mass.  
 265,172 Secondary Batteries, Plate for. J. A. Mearns, Washington, D. C., C. H. Key, Cobourg, Ont., Canada.  
 265,688 Secondary Battery. C. F. Brush, Cleveland, Ohio.  
 265,114 Secondary Battery. A. K. Eaton, Brooklyn, N. Y.  
 265,262 Secondary Battery. W. A. Shaw, Brooklyn, N. Y.  
 265,686 Secondary or Storage Battery Element. C. F. Brush, Cleveland, Ohio.  
 265,173 Telegraph Printing. W. J. McQuishand, Philadelphia, Pa.  
 265,621 Telephone. T. A. Edison, Menlo Park, N. J.  
 265,622 Telephone. T. A. Edison, Menlo Park, N. J.  
 265,652 Telephone Circuit and Apparatus. W. D. McKimney, Boston, Mass.  
 265,686 Telephone Exchange Mechanical. G. F. Shaver, Erie, Pa.  
 265,643 Telephonic Transmitter. G. F. Miliken, Boston, Mass.

OCTOBER 24TH.

- 265,405 Annunciator, Electric. J. C. Warner, Chicago, Ill.  
 265,319 Annunciators of Telephone Exchanges, Circuit for. C. E. Scribner, Chicago, Ill.  
 265,453 Electric Cable. P. B. Delany, New York, N. Y.  
 265,284 Electric Generator, Dynamo. R. C. H. Dey and W. S. Buffham, Racine, Wis.  
 265,483 Electrical Distribution, Junction for Central Station of Systems of. J. Kraus, Menlo Park, N. J.  
 265,519 Electric Fixtures. J. Sturges, New York, N. Y.  
 265,466 Electric Machine. J. Gordon, Paris, France.  
 265,963 Lamp, Electric. C. F. Hubbard, London, England.  
 265,157 Lamp, Electric Arc. J. D. F. Andrews, Chatham, County of Kent, England.  
 265,455 Lamp, Electric Arc. W. P. Freeman, New York, N. Y.  
 265,447 Lamp, Electric Incandescent. T. A. Edison, Menlo Park, N. J.  
 265,258 Lamp, Electric Incandescent. H. Gage, New York, N. Y.  
 265,363 Lamp, Complex Apparatus for treating, Vacuum Incandescent Electric. H. J. Muller, New York, N. Y.  
 265,582 Telegraphs, Indicator for Automatic Printing. A. F. and F. D. Johnson, Brooklyn, N. Y.  
 265,583 Telegraphs, Indicator for Automatic Printing. A. F. and F. D. Johnson, Brooklyn, N. Y.  
 265,252 Telegraph Batteries. J. A. Gage.  
 265,134 Telephone Central Office Switch and Apparatus. H. W. Breckenridge and T. W. Burbury, Cleveland, Ohio.  
 265,134 Telephone Exchange System. C. E. Scribner.  
 265,28 Telephone Exchanges, Manual Switch Board for. C. C. Haskins and C. H. Wilson, Chicago, Ill.  
 265,34 Telephone Machine. J. A. Watson.  
 265,217 Telephone Switch. C. W. Lewis.  
 265,61 Telephone Switch. C. W. Lewis.  
 265,130 Telephone Switch Board and Pneumatic Signal therefor. C. E. Scribner.  
 265,277 Telephone Indicator and Automatic Circuit Breaker Combined. W. C. Eckert, J. A. Seely, E. Cincinnati, Ohio.



# A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

## OCTOBER 31st.

- 3 Carbon Conductors, Apparatus for Heating. T. E. Lockwood, Paris, France.
- 4 Electric Circuits, Implement for Closing and Testing. I. Mann, Detroit, Mich.
- 5 Electric Distribution System. T. A. Edison, Menlo Park, N.J.
- 7 Electric Lines, Conduit for. R. H. Corbett, New York, N.Y.
- 5 Electric Machines, Commutator Brush for Dynamo. W. B. Mason, Boston, Mass.
- 1 Electrical Conductors, Conduit for. G. S. Eaton, Brooklyn, N.Y.
- 6 Electrical Conduit, Underground. S. D. Strohm, Philadelphia, Pa.
- 2 Electrodes for Secondary Batteries, Making. C. F. Brush, Cleveland, Ohio.
- 3 Galvanic Batteries, Containing Vessel for. C. A. Faure, Paris, France.
- 7 Interlocking Apparatus, Hydraulic and Electric. O. Gassett, Boston, Mass.
- 1 Lamp, Incandescent Electric. E. Weston, Newark, N.J.
- 3 Lamps, Shunting Device for Electric. E. Weston, Newark, N.J.
- 0 Magneto or Dynamo-Electric Machine. E. Weston, Newark, N.J.
- 4 Railway Signaling Apparatus, Electric. U. A. Scott, Boston, Mass.
- 5 Railway Train Electric Signaling Apparatus. E. T. Gilliland, Indianapolis, Ind.
- 0 Telephone Switch. S. Bergmann, New York, N.Y.
- 3 Telephone Transmitter. D. Dranbaugh, Eberly's Mill, Pa.
- 5 Telephones, Connecting Device for Operators. L. Mann, Detroit, Mich.
- 5 Telephonic Receiver. S. E. Beedy, Farmington, Me.
- 7 Telephonic Transmitter. S. E. Beedy, Farmington, Me.
- 3 Carbon Black, Apparatus for Manufacturing. J. T. Dysart.

## NOVEMBER 7th.

- 10 Chandelier for Electric Candles. C. A. Cheever, New York, N.Y., and W. L. Candee, Brooklyn, N.Y.
- 10 Clock for Making Electric Signals. R. W. Willson, New Haven, Conn.
- 7 Circuit Closer. L. Waldo, New Haven, Conn.
- 10 Clocks, Device for Synchronizing. R. W. Willson, New Haven, Conn.
- 2 Distance Register, Electric. E. R. E. Cowell, Detroit, Mich.
- 5 Electric Machine, Dynamo. V. W. Blanchard, New York, N.Y.
- 6 Electric Machine, Dynamo. E. J. Harling and E. Hartmann, London, England.
- 0 Electric Machine, Dynamo. P. Jablochkoff, Paris, France.
- 0 Electric Machine, Dynamo. G. A. Scheefer, Evansville, Ind.
- 3 Electrical Currents, Metallic Circuit for. S. D. Strohm, Philadelphia, Pa.
- 7 Electrical Currents, Metallic Circuit for. S. D. Strohm, Philadelphia, Pa.
- 10 Electro-Pneumatic Gate and Signal Operating Apparatus. W. Robinson, Boston, Mass.
- 5 Electro-Therapeutic Apparatus. J. W. See, Hamilton, Ohio.
- 10 Insulating Compound for Electric Wires. R. S. Waring, Pittsburg, Pa.
- 5 Insulating Material for Electric Uses. R. S. Waring, Pittsburg, Pa., and J. B. Hyde, New York, N.Y.
- 14 Insulating Wires for Electric Uses. Process of and Apparatus for. R. S. Waring, Pittsburg, Pa., and J. B. Hyde, New York, N.Y.
- 15 Lamp, Electric-Arc. C. A. Cooley, New Britain, Conn.
- 10 Magnet, Electro. V. W. Blanchard, New York, N.Y.
- 7 Secondary Battery. V. W. Blanchard, New York, N.Y.
- 3 Secondary Battery. E. T. Starr, Philadelphia, Pa.
- 2 Telegraph Railway Car (Re-issue). J. R. Finney, Pittsburg, Pa.
- 7 Telegraph, Ship. J. S. Osborne, Charing Cross, County of Middlesex, England.
- 14 Telegraph Switch. R. Brougham, Hodden-street, Regent-street, County of Middlesex, England.
- 10 Telephone, Mechanical. H. E. Huston, Monticello, Ill.
- 10 Telephone Systems Electric Circuit for. J. W. Brennan, Chicago, Ill.
- 10 Telephone Systems, Electric Switch and Circuit for. J. W. Brennan, Chicago, Ill.
- 15 Tower for Electric Lights, &c. C. D. F. Smith, Aurora, Ill.

## NOVEMBER 14th.

- 17 Electric Cables, Machine for the Manufacture of. W. H. Sawyer, Providence, R.I.
- 10 Electric Machines, Electric Governor for Driving Engines for Dynamo. S. D. Mott, Menlo Park, N.J.
- 10 Electrotypes, Machine for Notching and Trimming. C. M. Lets, Chicago, Ill.
- 10 Galvanic Battery. A. Bernstein, Berlin, Germany.
- 17 Galvanic Battery. G. W. O'Harra, Kalamazoo, Mich.
- 10 Lamp, Electric-arc. N. McCarty, Brooklyn, N.Y.
- 14 Lamp, Electric-arc. E. Weston, Newark, N.J.
- 17 Lamp, Incandescent Electric. S. H. Emmens, London, England.
- 10 Measuring Electric Currents. S. D. Mott, Menlo Park, N.J.
- 17 Station Indicator, Electric. J. F. Loughlin, Hyde Park, Mass.
- 10 Telegraph Cable. C. J. Shafter, Grand Junction, Mich.
- 10 Telegraph Printing. G. M. Phelps, Brooklyn, N.Y.
- 17 Telephone System. T. A. Watson, Everett, Mass.
- 10 Underground Lines, Conduit for. W. B. Eltonhead, Philadelphia, Pa.
- 10 Gas Engines, Electrical Igniting Device for. A. K. Rider, Walden, N.Y.

## NOVEMBER 21st.

- 17 Annunciator, Electrical. F. Tanner, Detroit, Mich.
- 17 Burglar Alarm, Electrical. C. A. E. Ruebel, Chillicothe, Ohio.
- 10 Electric Machine Regulator, Dynamo. J. R. Finney, Pittsburg, Pa.
- 15 Electric Signaling Apparatus. H. W. Southworth, Springfield, Mass.
- 11 Electrical Apparatus, Commutator for. C. C. Peck and W. H. Chapman, Middleburg, Vt.
- 17 Electrical Switch Board. J. F. Gilliland, Indianapolis, Ind.
- 11 Lamp, Electric-arc. C. A. Humey, New York, N.Y.
- 10 Pumping Apparatus, Electric. C. C. Peck, and W. H. Chapman, Middleburg, Vt.
- 7 Railway Signal Apparatus, Electric. O. Gassett, Boston, Mass.
- 9 Railway Signal Apparatus, Electric. O. Gassett, Boston, Mass.
- 0 Secondary Battery. J. R. Finney, Pittsburg, Pa.
- 4 Secondary Battery. E. F. Starr, Philadelphia, Pa.
- 3 Telegraph Key. J. T. Guthrie, Leesburg, Ohio.
- 3 Telegraph Line, Underground. C. J. Hansen, Washington, D.C.
- 3 Telegraph Sounder. J. H. Bunnell, New York, N.Y.
- 9 Telegraphic Register. E. L. Pope, Elizabeth, N.J.
- 5 Telephone Exchange, and Apparatus therefor. H. Lartigue, Paris, France.
- 7 Telephone Mechanical. H. T. Johnson, Selo, N.Y.
- 0 Telephone System. W. A. Jackson and W. R. Cole, Detroit, Mich.

## J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERT

NOVEMBER 28TH. -

- 269,000 Electric Cable. R. S. Waring, Pittsburg, Pa.  
269,157 Electric Cable. R. S. Waring, Pittsburg, Pa.  
269,158 Electric Cable, Lead Armored. R. S. Waring, Pittsburg, Pa.  
269,059 Electric Cable, Submarine. R. S. Waring, Pittsburg, Pa.  
269,121 Electric Cables, Dry Insulating and Braided. R. S. Waring, Pittsburg, Pa.  
269,159 Electric Cables, Uninsulating and Braided. R. S. Waring, Pittsburg, Pa.  
269,171 Electric Generator. V. W. Blanchard, New York, N. Y.  
269,255 Electric Machine, Dynamo. R. H. Mather, Newark, Conn.  
269,311 Electric Machine, Dynamo. E. Weston, Newark, N. J.  
269,205 Electric Machine, Dynamo or Magneto. T. A. Edison, Menlo Park, N. J.  
269,175 Electric Storage Batteries, Apparatus for Charging. V. W. Blanchard, New York, N. Y.  
269,031 Electric Wire Conduits, Increasing and Insulating Joint for. C. Sanford, Pittsburg, Pa.  
269,116 Electrode, Vacuum. V. W. Fife, Jackson, Ala., Ill.  
269,218 Lamp, Electric arc. A. Graham, London, England.  
269,124 Lamp, Electric arc. F. J. Hartung, and F. Hartman, London, England.  
269,038 Lamp, Electric arc. J. M. Lang, Chicago, Ill.  
269,214 Lamp, Electric arc. R. H. Mather, Newark, Conn.  
269,155 Lamp, Electric arc. S. F. Van Hook, New York, N. Y.  
269,219 Lamp, Electric Incandescent. J. V. Nichols, Brooklyn, N. Y.  
269,270 Lamp, Electric Incandescent. J. V. Nichols, Brooklyn, N. Y.  
269,120 Lamp Holder, Incandescent. E. Weston, Newark, N. J.  
269,330 Lamp Holder, Incandescent-electric. E. Weston, Newark, N. J.  
269,206 Lamp, Incandescent-electric. T. A. Edison, Menlo Park, N. J.  
269,099 Magnetoelectric Machine. O. Hinkel, Jersey City, N. J.  
269,360 Secondary Battery. A. K. Eaton, Brooklyn, N. Y.  
269,309 Secondary Battery. E. T. and E. F. Starr, Philadelphia, Pa.  
269,237 Telegraph Printing. A. F. and E. B. Johnson, Brooklyn, N. Y.  
269,317 Telegraph Circuits, Condenser for. R. Thompson, Buffalo, N. Y.  
269,261 Telephone Exchange System and Apparatus. H. Rogers, New York, N. Y.  
269,045 Telephone T. H. Apparatus. J. W. See, Hartford, Ohio.  
269,329 Telephone Apparatus. W. J. Dwyer, Boston, Mass.  
269,034 Insulating Composites, Manufacture of. M. McKay, London, England.  
269,075 Insulator, Noise Deadenng. G. M. Brown, Worcester, Mass., U. S. A.

DECEMBER 6TH.

- |         |                                                                     |                                  |
|---------|---------------------------------------------------------------------|----------------------------------|
| 268,389 | Electric Wires, Carrying and Conducting                             | W M Conway, Baltimore, Md        |
| 268,392 | Lamp, Electric                                                      | N H Edgerton, Philadelphia, Pa   |
| 268,394 | Lamp, Electric                                                      | J R Finney, Pittsburg, Pa        |
| 268,477 | Railways, Powering Contact for Electric                             | J R Finney, Pittsburg, Pa        |
| 268,601 | Telegraph Underground                                               | L Hoes, Chester, Pa              |
| 268,678 | Telegraph Wire                                                      | F K Fitch, New York, N Y         |
| 268,761 | Telegraphic Repeater                                                | J L Sathers, Brooklyn, N Y       |
| 268,746 | Telegraphic Apparatus                                               | J K Sullivan, Ashland, Ohio      |
| 268,751 | Telephon, Hand                                                      | F Shaw, New York, N Y            |
| 268,620 | Telephon Receiving                                                  | G E Dally, Louisville, Col       |
| 268,523 | Valves of Steam Engines, Lifting Devices for Operating the Throttle | J Nesbitt, Toronto, Ontario, Can |

DECEMBER 12TH.

- |         |                                                                         |
|---------|-------------------------------------------------------------------------|
| 208,069 | Electro Machine, Dynamo E A Sperry, Cortand, N Y                        |
| 208,080 | Electric Machines, Armature for Dynamos F Bon, Union City Ind           |
| 208,130 | Electric Machines, Armature for Dynamos A H Fisher, Union City, Ind     |
| 208,087 | Electric Motor for Locomotive Engines W I McCreary, Atlanta Ga          |
| 208,088 | Insulating Conductions, Conductors for J K McLaughlin, Philadelphia, Pa |
| 208,089 | Insulated Conductions, Conductors for J K McLaughlin, Philadelphia, Pa  |
| 208,092 | Electrical Locomotives L J Moore, San Francisco Cal                     |
| 208,132 | Lamp, Electric W Stacey Jr., New Wood, N J                              |
| 208,099 | Lamp, Electric C M Hall, Troy N Y                                       |
| 208,151 | Lamp, Electric L G Wooley, Mendon Mich                                  |
| 208,051 | Lamp, Oilburning, Electric C M Hall, Troy, N Y                          |
| 208,013 | Lamps, Jetout for Electric C F Coleman, and H A Smith, Atlanta, Ga      |
| 208,730 | Telephone for all ways W L Hunt Fort Hope Ontario, Canada.              |
| 208,120 | Telephone Station Box, Automatic J Seiler, San Francisco, Cal           |
| 208,130 | Telephone Exchange, Automatic F H Suchs, Washington, D C                |
| 208,130 | Telephone, Mechanical C Egan, Zanesville, Ohio.                         |

DECEMBER 19TH.

- |         |                                                          |                                          |
|---------|----------------------------------------------------------|------------------------------------------|
| 269,470 | Electric Cable.                                          | W H Sawyer Providence R I                |
| 269,476 | Electric Control System for Utilizing Lamp Switches for. | E T Starr Philadelphia Pa                |
| 269,479 | Electric Wires; Contact for.                             | B Rover Lebanon Pa                       |
| 269,724 | Electrical Controlling Cord.                             | W H Sawyer New York N Y                  |
| 269,781 | Electricity; Various Issues of Power.                    | Z J Luchman Paris France                 |
| 269,791 | Electric Machine Frame.                                  | A J Schreiber Brooklyn N Y               |
| 269,818 | Electric Switch Motor.                                   | C C Lock and W H Mayo Middlebury Vt      |
| 269,830 | Electric and Gas Switches Electric.                      | C A Evans Grand Pa                       |
| 269,850 | Lamp Switches; Footing.                                  | M M M Saffery New York N Y               |
| 269,857 | Lamp Electric arc.                                       | A G Howell Danvers Vt                    |
| 269,858 | Lamp Electric arc.                                       | W S Black New York N Y                   |
| 269,861 | Lamp Electric arc.                                       | C Howell New York N Y                    |
| 269,881 | Telephone Reporter.                                      | J H Rogers New York N Y                  |
| 269,885 | Telephones; Arithmetic Magnetic System for.              | W Hunter Baltimore Md                    |
| 269,936 | Telephone Exchange system, and Apparatus therefor.       | J O Shiras, and E A Eckert Cincinnati Oh |

DECEMBER 26th.

- |         |                                                |                                           |
|---------|------------------------------------------------|-------------------------------------------|
| 207,558 | Electric Current Meter                         | A. Bernstein, Boston, Mass.               |
| 207,565 | Electric Machine Dynamometer                   | F. Thayer, New Britain, Conn.             |
| 207,571 | Electric Machine Dynamometer                   | F. Weston, Newark, N. J.                  |
| 207,576 | Electric Machine Dynamometer                   | H. S. Myers, New Haven, Conn.             |
| 207,581 | Electric Machine Dynamometer                   | F. H. Jones, New Britain, Conn.           |
| 207,582 | Electric Self-Adjustable Transformer and Motor | C. A. Matthieser, Vienna, Austria-Hungary |
| 207,588 | Electric Transformer and Inductor              | W. F. H. Jones, Philadelphia, Pa.         |
| 207,597 | Insulating Wire                                | L. H. Metcalf, Richmond, Ind.             |

# A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

- 6 Lamp, Electric Incandescent. E. Weston, Newark, N.J.
- 7 Lamp Holder, Incandescent Electric. E. Weston, Newark, N.J.
- 8 Lamps, Apparatus for Suspending, Raising, and Lowering Electric. C. C. Jennings, Buffalo, N.Y.
- 9 Lamps, Suspending and Circuit Controlling Mechanism for Arc. E. Weston, Newark, N.J.
- 4 Medical Induction Coil, Electro. J. Kidder, New York, N.Y.
- 5 Telegraph and Telephone Cable. J. Speicher, New York, N.Y.
- 4 Telegraph Printing. W. J. Burnside, Hilcot Court Road, Lower Norwood, County of Surrey, England.
- 1 Telegraph Transmitter, Electric. E. M. Hamilton, New York, N.Y.
- 7 Telephone, Speaking. G. A. Fitch, Oakland, N.Y.
- 6 Rheostat. E. Weston, Newark, N.J.

## JANUARY 2ND, 1883.

- 5 Time Detector, Watchman's Electric. J. E. Richards, Cedar Key, Fla.
- 5 Time Piece, Electric Synchronizing Apparatus for. J. Hamblet, Brooklyn, N.Y.
- 5 Vehicle, Electric. J. R. Finney, Pittsburg, Pa.
- 5 Annunciator, Oral. J. Ireland, Cleveland, Ohio.
- 5 Burglar Alarm, Electric. C. T. Jackson, New York, N.Y.
- 7 Electric Machine, Dynamo. A. Chertemps, and L. Dauden, Paris, France.
- 5 Electric Motor. W. L. Silvey, Castleton, Ind.
- 5 Electric Wire Cable. J. Mackintosh, Philadelphia, Pa.
- 5 Insulator for the Suspension of Electrical Wire Conductors. P. Higge and W. Courtenay, New York, N.Y.
- 7 Lamp, Electric. C. A. Hussey, New York, N.Y.
- 5 Lamp, Electric-arc. C. A. Hussey, New York, N.Y.
- 5 Lamp, Electric-arc. C. A. Hussey, New York, N.Y.
- 7 Mallett, Electric. J. R. Finney, Pittsburg, Pa.
- 5 Telephone Electric. H. B. Porter, Chicago, Ill.
- 5 Telephone Transmitter and Receiver. J. H. Rogers, Washington, D.C.
- 5 Telephonic Transmitter. G. E. Shaw, Chicago, Ill.
- 5 Thermostat, Electric. T. Reeve, Brooklyn, N.Y.

## JANUARY 9TH.

- 5 Apparatus for Cooling the Armatures of Dynamo-electric Machines. Peter N. Vander Weyde, New York, N.Y.
- 5 Automatic Electric Railway. Edward N. Dickerson, Jr., and Charles G. Curtis, New York.
- 5 Coupling for Wires and Electric Conductors. Henry F. Humphrey, Fairfield, Iowa.
- 5 Device for Controlling Electrical Currents. Charles J. Van Depoele, Chicago, Ill.
- 5 Dynamo-electric Machine. Joseph Lewis, Chicago, Ill.
- 5 Dynamo-electric Machine. James McTighe and Thomas J. McTighe, Pittsburg, Pa.
- 5 Electrical Car Brake. Albert S. Parsons, Huntington W. Va.
- 5 Electrical Control for Pendulum Clocks. Robert W. Wilson, New Haven, Conn.
- 5 Electric-arc Lamp. Percy Ruakin Allen, Victoria Works, County of Surrey, England.
- 5 Electric-arc Lamp. Samuel Martin and James F. Richards, Pittsburg, Pa.
- 5 Electric Cable. William W. Jacques, Boston, Mass.
- 5 Electric Light. Henry A. Seymour, Washington, D. C.
- 5 Magneto-electric Machine. Adam Miller, Glasgow, Scotland.
- 5 Portable Voltaic Battery. James Makerlie, County of Middlesex, England.
- 5 Railroad Signal. Joshua Gray, Medford, Mass.
- 5 Telephonic Circuit. J. Milton, Stearns, Jr., Brooklyn, N.Y.
- 5 Telephone Exchange System. Charles A. Randall, New York, N.Y.
- 5 Telephone Switch. Thomas J. McTighe, Pittsburg, Pa.
- 5 Telephone Switch. Thomas A. Watson, Everett, Mass.

## JANUARY 16TH.

- 5 Clock, Electric Alarm. J. I. Conklin, Jr., New York, N.Y.
- 5 Electric Battery, Secondary. W. K. Freeman, Brooklyn, N.Y.
- 5 Electric Lighting for Railway Trains, System of. C. E. Buell, New Haven, Conn.
- 5 Electric Machine, Dynamo. W. P. Freeman, New York, N.Y.
- 5 Electric Machine, Dynamo. W. P. Freeman, New York, N.Y.
- 5 Electric Machines, Armature for Dynamo. W. P. Freeman, New York, N.Y.
- 5 Electric Machines or Electric Motors, Armature for Dynamo. W. K. Freeman, Brooklyn, N.Y.
- 5 Electric Storage and Supply, System of. C. E. Buell, New Haven, Conn.
- 5 Galvanic Battery. G. Scrivanow, Paris, France.
- 5 Lamp, Electric. W. F. Jobbins, East Orange, N.J.
- 5 Lamp, Electric-arc. G. W. Beardslee, Brooklyn, N.Y.
- 5 Lamp, Electric-arc. C. A. Hussey, New York, N.Y.
- 5 Railway Signaling, Electric Circuit for. G. Westinghouse, Jr., Pittsburg, Pa.
- 5 Telegraph Key. E. A. Edwards, Cincinnati, Ohio.
- 5 Telegraph Key. W. D. Farrer, Boise City, Idaho.
- 5 Telegraph, Mechanical Speaking. A. M. Rosebrugh, Toronto, Ontario, Canada.
- 5 Telegraphs, Perforator for Automatic. T. M. Foote, Brooklyn, N.Y.
- 5 Telegraph Apparatus. W. L. Hunt, Fort Hope, Ontario, Canada.
- 5 Telegraphy. T. M. Foote, New York, N.Y.
- 5 Telephone Transmitter. W. A. Crawford, San Antonio, Texas.

## JANUARY 23RD.

- 56 Electric Battery, Fluid. E. Berliner, Boston, Mass.
- 56 Electric Induction Machine. A. G. Waterhouse, New York, N.Y.
- 57 Electric Light. E. Weston, Newark, N.J.
- 56 Electric Light and Gas Burner, Combined. W. A. Shaw, Brooklyn, N.Y.
- 57 Electric Motor. S. S. Wheeler, C. G. Curtis, and F. B. Crocker, New York, N.Y.
- 54 Lamp, Electric-arc. C. P. Jørgensen, Copenhagen, Denmark.
- 57 Lamp, Electric-arc. E. Weston, Newark, N.J.
- 57 Lamp, Incandescent, Electric. E. Weston, Newark, N.J.
- 56 Lamp, Magazine, Electric. A. T. Gifford, Providence, R.I.
- 5 Telegraphs, Optical Attachment for Printing. W. J. McCausland, Philadelphia, Pa.
- 5 Telegraphy, Multiplex. C. Seldon, Toledo, Ohio.
- 5 Telephone Receiver. S. H. Bartlett, and H. E. Waite, New York, N.Y.

## JANUARY 30TH.

- 56 Electric Circuits, Device for Making and Breaking. R. W. Wilson, New Haven, Conn.
- 56 Electric Motor. A. Miller, Glasgow, Scotland.
- 56 Galvanic Battery. J. A. Barrett, Chicago, Ill.
- 56 Lamp, Electric-arc. E. H. Anet, La Grange, Ill.
- 56 Lamp, Electric-arc. J. R. Finney, Pittsburg, Pa.
- 56 Lamp, Electric-arc. W. Hochhausen, New York, N.Y.

# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER

- 271,458 Lamp, Electric-arc W Hochhausen, New York, N Y
- 271,502 Lamp, Incandescent Electric A Bernstein, Boston, Mass.
- 271,457 Lamps, Automatic Cut-out for Electric W Hochhausen, New York, N Y
- 271,518 Telegraph Cable Submarine S Trott and F A Hamilton, Halifax, Nova Scotia, Canada
- 271,282 Telegraph Cable Pipe W R Patterson, Chicago, Ill.
- 271,273 Telephone Exchanges, Circuit for Multiple Switch Boards for C E Scribner, Chicago, Ill.
- 271,324 Telephone, Mechanical G K and H C Farrington, Kirksville, Mo.
- 271,513 Telephone System and Apparatus C A Randall, New York, N Y.
- 271,380 Telephones, Secrecy Switch for C E Scribner, Chicago, Ill.

## FEBRUARY 6TH.

- 271,707 Annunciator and Fire Alarm, Electric Hotel A T Hess, Des Moines, Iowa.
- 271,721 Brake Setting Apparatus, Electric J B Low, Pulaski N Y
- 271,992 Car Signal, Electro-magnetic J W Marley, Chicago Ill
- 271,925 Electric Current Wires, Fastening for H G Escke, Springfield, Mass.
- 271,948 Electric Current Regulator E Thomson, New Britain, Conn
- 271,372 Electric Machine, Dynamo W Baxter, Jr, Jersey City, N J
- 271,979 Electric Machine, Dynamo and Magneto E Gordon, New York, N Y
- 271,928 Electric Machine, Dynamo and Magneto C A Seely, New York, N.Y
- 271,613 Electric Machine Governor, Dynamo T A Edison, Menlo Park, N J
- 271,617 Electric Machine Regulator, Dynamo T A Edison, Menlo Park, N.J.
- 271,651 Electric Machine Regulator, Dynamo J F Ott, Newark, N J
- 271,947 Electric Machines, Commutator for Dynamo E Thomson, New Britain, Conn.
- 271,913 Electric Switch Board T J Ferris, Brooklyn, N Y
- 271,832 Electrical Conductor P G Gardner, Jr, J W Le Roy, and G K Tinker, North Adams, Mass.
- 271,914 Electrical Switch Board T J Ferris, Brooklyn, N Y
- 271,805 Gas Lighting Burner, Electric C H Crockett, Boston, Mass.
- 272,004 Gas Lighting Burner, Electric H J Warren, West Bridgewater, Mass.
- 271,691 Incubators, Electric Regulator and Alarm for F Roschbrook, Elmira, N Y.
- 271,884 Insulator, Electrical D M Stewart, Cincinnati, Ohio
- 271,816 Lamp, Electric-arc W J Dudley, Lexington, Ky, C F Rapp, Cincinnati, Ohio
- 271,613 Lamps, Manufacture of Incandescent Electric T A Edison, Menlo Park, N J
- 271,733 Lightning Rods, Tripled Standard for T H Putze, and T D Ridge, Greencastle, Ind.
- 271,904 Mail Conveyor, Electric E Nechusen, New York, N Y
- 271,628 Secondary Battery A Huel Railway, N.J
- 271,958 Telegraph, Railway Train W I Waters, Atlanta, Ga
- 271,307 Telegraphic Station Switch for Fire G F Bulen, Jersey City, N J
- 271,938 Telegraphic Fire Alarm Stations, Automatic Testing Apparatus for G F Bulen, Jersey City, N.J.
- 271,878 Telephone C J Loring, and G W Pierce, Boston, Mass
- 271,616 Telephone Receivers, Circuit Closes for E C Dean, Washington, D C
- 271,424 Telephone Transmitter E A Schmitt, Brooklyn N Y
- 271,903 Telephone Transmitters, Mouthpiece for A S Nichols, New Haven, Conn.
- 271,750 Wire, Manufacture of Covered or Insulated J D Thomas, New York, N Y.

## FEBRUARY 13TH.

- 272,100 Clock, Electric D F Sweet, Hastings, Mich
- 272,208 Electric Machine Dynamo E J Houston, Philadelphia, Pa.
- 272,306 Electric Machine Dynamo E Weston Newark, N J
- 272,405 Electric Transmission of Power System for the E Weston Newark, N.J.
- 272,221 Electric Wires, Underground Conductor for J S Du Bois, Camden, N J.
- 272,922 Electrical Transmission of Power Device for Regulating the E Weston Newark, N J.
- 272,301 Electrical Transmission of Power Device for Regulating the E Weston Newark, N J.
- 272,304 Electrical Transmission of Power, Device for Regulating the E Weston, Newark, N J.
- 272,353 Electro-magnetic Retarding Device F Thomson, New Britain, Conn.
- 272,169 Electrother Extension I Stanger, New York, N Y
- 272,187 Gas Generator Electric A F Bull Philadelphia Pa
- 272,430 Insulator for Electric Conductors I Mace, Philadelphia, N.J.
- 272,272 Lamp Electric-arc N S Keith, New York, N Y
- 272,307 Lamp Electric-arc E Weston, Newark, N J
- 272,125 Lamp, Electric Incandescent P Dicht, Elizabeth, N J.
- 272,017 Lamps, Carbon Electrode for Electric J. E. Atwood, Troy, N Y
- 272,234 Magneto-electric Generators, Automatic Shut for E T Gilliland, Indianapolis, Ind
- 271,142 Railway Signal, Electric W W Le Grande, Louisville, Ky
- 272,276 Railway Signal, Electric W W Le Grande, Louisville, Ky
- 272,210 Telegraphic Relay T Cochran, Brooklyn, N.Y
- 272,034 Telephone T A Edison, Menlo Park, N J
- 272,359 Telephone, Electric Speaking A W Rose, and C A. Cheerer, New York, N.Y.

## FEBRUARY 20TH.

- 272,811 Electric-arc Light J A Wetmore, Concord, Mich
- 272,441 Electric Underground Conductor R M Hunter, Philadelphia, Pa
- 272,813 Electric Wires, System of Laying Submarine Lines of J T Goodfellow, Philadelphia, Pa.
- 272,792 Electric Currents, Metallic Circuit for S D Strode, Philadelphia, Pa.
- 272,779 Electro-magnetic Regulator R H Tucker, East Orange, N J
- 272,650 Insulated Electric Conductor A A Cowles, New York, N Y
- 272,650 Insulated Electric Conductor A A Cowles, New York, N Y
- 272,654 Railway Signal, Electric F I Oussett, Somerville, Mass
- 272,830 Railway Signal and Switch System, Electric Interlocking J K Knight, New York, N Y, and W. Brooklyn, N Y
- 272,724 Ships and Orbits of Currents, Electric Log or Apparatus for Ascertaining the Speed of. R M. London, Fenchley, County of Middlesex, England
- 272,774 Telegraph Cable S M Rittenhouse, Baltimore, Md
- 272,524 Telegraph Wire Coupling C Ritt, Watford, N Y
- 272,646 Telegraphic Signaling Apparatus for District and Fire Alarm T A Casey, New York, N Y
- 272,506 Telephone Exchanges, Alarm Signal Apparatus for E A Woolk, Springfield Mo

## MARCH 6TH.

- 273,503 Car Brake, Electric D J Macpherson, Sioux Falls, Dakota.
- 273,634 Clock Electric D F Sweet, Hastings Mich
- 273,622 Door Opener Electrical A T Smith, New York, N Y
- 273,391 Electric Force, Apparatus for Regulating the Transmission of. M. Levy, Paris, France.
- 273,48 Electric Machine Regulator Dynamo T A Edison, Menlo Park, N J
- 273,498 Electric Machine Regulator, Dynamo T A Edison, Menlo Park, N J
- 273,406 Electric Machine, Air Blast Attachment for Commutators of Dynamo K. Thomson, New Britain, Conn
- 273,359 Electric Wires, Binding Screw for. E C Coolidge, Boston, Mass.



# A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

- 5 Electric Wires, Underground Conduit for. W. Plankinton, Milwaukee, Wis.
- 6 Electrical Conductor Coupling. P. R. Allen, Southwark, County of Surrey, England.
- 8 Electrical Generator Engines, Valve Gear for. T. A. Edison, Menlo Park, N.J.
- 1 Electrical Generators, Regulator for Driving Engines of. T. A. Edison, Menlo Park, N.J.
- 9 Electrical Transmission of Power, Controlling the. E. Weston, Newark, N.J.
- 6 Electrode for Secondary Batteries. W. S. Platt, Waterbury, Conn.
- 2 Insulated Electrical Conductor. W. R. Patterson, Chicago, Ill.
- 2 Insulating Substances, Filing Telegraph Cables with. W. R. Paterson, Chicago, Ill.
- 6 Lamp, Electric-arc. G. D. Allen, Brooklyn, N.Y.
- 14 Lamp, Incandescent Electric. H. Lea, Birmingham, County of Warwick, England.
- 5 Lamp, Incandescing Electric. T. A. Edison, Menlo Park, N.J.
- 13 Lamp, Incandescing Electric. T. A. Edison, Menlo Park, N.J.
- 13 Lamp, Incandescing Electric. J. S. Kelso, Jr., Stamford, Conn.
- 4 Railway, Electrical. T. A. Edison, Menlo Park, N.J.
- 7 Railway Signal, Electric. C. J. Means, Boston, Mass.
- 10 Railway System, Electro-magnetic. T. A. Edison, Menlo Park, N.J.
- 10 Railway Turn-table, Electric. T. A. Edison, Menlo Park, N.J.
- 2 Secondary Battery. T. A. Edison, Menlo Park, N.J.
- 4 Telegraph, Fire and District. T. D. Lockwood, Malden, Mass.
- 4 Telegraph Sounder. W. E. Davis, Jersey City, N.J.
- 6 Visual Indicator, Electrical. J. W. Mackenzie, New York, N.Y.

## MARCH 13TH.

- 3 Car Brake, Electro-magnetic. H. S. Park, Henderson, Ky.
- 6 Electric Battery. P. Jablochhoff, Paris, France.
- 4 Electric Testing Apparatus. C. J. H. Woodbury, Lynn, Mass.
- 9 Electrical Conductors, Junction Box and Connection for. J. Kruesi, Brooklyn, N.Y.
- 3 Electrical Distribution, System of Underground Conductors for. T. A. Edison, Menlo Park, N.J.
- 7 Fence and Telegraph Post, Iron. L. Petrequin, Detroit, Mich.
- 1 Galvanic Battery. L. D. McIntosh, Chicago, Ill.
- 6 Lamp, Electric-arc. L. Piette and F. Krizik, Pilsen, Austria-Hungary.
- 4 Lamp, Incandescent Electric. A. Bernstein, Boston, Mass.
- 4 Magneto-electric Signaling Apparatus. T. A. Edison, Menlo Park, N.J.
- 2 Secondary Battery. C. F. Brush, Cleveland, Ohio.
- 5 Secondary Battery. N. S. Keith, New York, N.Y.
- 9 Telegraph Printing. W. J. Burnside, Hilcot Court Road, Lower Norwood, County of Surrey, England.
- 8 Telegraphic Receiving Instrument. E. M. Hamilton, New York, N.Y.
- 5 Telephone Transmitter. R. D. Woodworth, Orange, N.J.

## MARCH 20TH.

- 5 Clock, Electric. V. Himmer, New York, N.Y.
- 5 Clock Escapement, Electric. A. W. Gray, New York, N.Y.
- 3 Clocks, Circuit Controller for Electric. V. Himmer, New York, N.Y.
- 4 Clocks, Circuit Controller for Electric. V. Himmer, New York, N.Y.
- 1 Electric Current Regulator. C. G. Perkins, Camden, N.J.
- 0 Electric Currents, Cut-out for Dangerous. F. A. Swan, and C. B. Bosworth, Boston, Mass.
- 1 Electric Cut-out. F. A. Swan, and C. B. Bosworth, Boston, Mass.
- 1 Electric Motor. J. B. Atwater, Chicago, Ill.
- 3 Electrical Conductors, Underground Conduit for. H. R. Meyer, Liverpool, County of Lancashire, England.
- 10 Electrical Distribution, System of. T. A. Edison, Menlo Park, N.J.
- 12 Galvanic Batteries, Circle Switch for. H. Lowe, Brooklyn, N.Y.
- 10 Galvanic Battery. F. De Lalande, Paris, France; and G. Chaperon, Mines, D'Alosno, Spain.
- 21 Gas for Electric Lights, Apparatus for Substituting. P. B. Delany, New York, N.Y.
- 26 Incandescents, Manufacture of. T. A. Edison, Menlo Park, N.J.
- 17 Lamp Cut-out, Electric. J. H. Elfering, Chicago, Ill.
- 23 Lamp, Electric. T. A. Edison, Menlo Park, N.J.
- 20 Lamp, Electric-arc. C. G. Perkins, Camden, N.J.
- 22 Lamp, Electric-arc. E. Thomson, New Britain, Conn.
- 27 Lamp Holder, Incandescent. E. Weston, Newark, N.J.
- 25 Lamp, Incandescent Electric. T. A. Edison Menlo Park, N.J.
- 24 Lamp, Incandescent Electric. T. A. Edison Menlo Park, N.J.
- 22 Telegraph and Semaphore Signal. W. W. McLellan, Newcastle, New Brunswick, Canada.
- 22 Telegraph Apparatus. G. D'Infreville, New York, N.Y.
- 20 Telegraph Printing. S. D. Field, New York, N.Y.
- 26 Telegraph Printing. H. Van Hoevenbergh, Elizabeth, N.J.
- 27 Telegraphy, Dynamo. H. Van Hoevenbergh, Elizabeth, N.J.
- 22 Telephone, Receiving. J. A. Maloney, Washington, D.C.
- 23 Telephone Transmitter, Electric. J. A. Maloney, Washington, D.C.
- 26 Telephonic Transmitter. C. Ader, Paris, France.

## MARCH 27TH.

- 4573 Bell, Electric. C. F. De Redon, Paris, France.
- 4562 Cables or Conductors, Suspending. C. E. Chinnock, Brooklyn, N.Y.
- 4565 Electric Generator. S. J. Wallace, Keokuk, Iowa.
- 4611 Electric Wires, Conduit for. W. H. Johnstone, Philadelphia, Pa.
- 4590 Electrical Conductor. G. F. Barker, Philadelphia, Pa.
- 4595 Insulated Wire for Electrical Purposes. T. H. Thompson, Waterbury Conn.
- 4592 Insulating Compound for Electrical Wires. J. F. Martin, Chicago, Ill.
- 4591 Insulator, Electric Wire. W. H. Reiff, Philadelphia, Pa.
- 4590 Lamp Bracket, Incandescent (Re-issue). E. Weston, Newark, N.J.
- 4544 Lamp, Electric-arc. J. Du Shane, South Bend, Ind.
- 4554 Lamp, Incandescent Electric. C. G. Perkins, Camden, N.J.
- 4553 Lamp, Switch, Incandescent Electric. C. G. Perkins, Camden, N.J.
- 4564 Lightning Conductor. J. H. Coon, Des Moines, Iowa.
- 4502 Secondary Battery. A. J. Martin, Catskill, N.Y.
- 4710 Telegraph or Telephone Lines, Conduit for. S. Brentano, New York, N.Y.
- 4565 Telegraph, Printing. G. B. Scott, Brooklyn, N.Y.
- 4746 Telegraph, Printing. S. D. Field, New York, N.Y.
- 4522 Telegraph Wire Conduit, Underground. A. Sloan, Newark, N.J.
- 4552 Telegraphy Apparatus, Electric. P. E. Derez, New York, N.Y.
- 4577 Telephone. T. A. Edison, Menlo Park, N.J.
- 4582 Telephone Call Circuits, Pole Changer for. E. E. Bawzel, Washington, D.C.
- 4503 Telephone Exchange Circuit. A. S. Hibbard, Milwaukee, Wis.
- 4557 Telephone Exchange Signaling Circuit and Apparatus. T. N. Vail, Boston, Mass.
- 4576 Telephone, Transmitting. T. A. Edison, Menlo Park, N.J.

## J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER

APRIL 3rd

- |         |                                                         |                                        |
|---------|---------------------------------------------------------|----------------------------------------|
| 274,004 | Carbon Rod or Stick, and mechanism for making the same. | C. F. Bush, Cleveland Ohio             |
| 275,179 | Electric Elevator                                       | S. D. Field New York, N. Y.            |
| 275,280 | Electric Light Circuit Is Safety Switch                 | Shunt Switch for                       |
| 275,281 | Electric Light Circuit Is Safety Switch                 | Shunt Switch for                       |
| 275,371 | Electric Machines Arrangement for Driving               | E. A. Edwards, Cincinnati Ohio         |
| 275,006 | Electric Signaling Apparatus                            | At C. C. C. E. I. Wood New York, N. Y. |
| 275,023 | Electric Wire Underground Conduit for                   | H. C. Gay, Philadelphia Pa.            |
| 274,916 | Lamp, Electric                                          | J. E. Dwyer, New York, N. Y.           |
| 275,168 | Lamp, Electric                                          | E. A. Edwards Cincinnati, Ohio         |
| 275,170 | Lamp, Electric                                          | E. A. Edwards Cincinnati Ohio          |
| 275,171 | Lamp, Electric                                          | E. A. Edwards Cincinnati, Ohio         |
| 275,172 | Lamp, Electric                                          | E. A. Edwards Cincinnati, Ohio         |
| 275,173 | Lamp, Electric                                          | E. A. Edwards Cincinnati Ohio          |
| 275,174 | Lamp, Electric                                          | E. A. Edwards Cincinnati Ohio          |
| 275,182 | Lamp, Electric                                          | J. K. Finney, Pittsburgh Pa.           |
| 275,183 | Lamp, Electric                                          | J. K. Finney, Pittsburgh Pa.           |
| 274,887 | Lamp, Electric                                          | S. F. Van Cleave, New York, N. Y.      |
| 274,970 | Lamp, Electric                                          | F. G. Wetherill, San Francisco, Cal.   |
| 274,959 | Lamp, Incandescent Electric                             | G. J. M. Clark, New York, N. Y.        |
| 275,257 | Magneto-electric Machine                                | S. Marks, Vienna Austria-Hungary       |
| 274,285 | Railway Signal Electric                                 | H. C. N. C. Mount Washington Ohio      |
| 275,188 | Railway Track, in its Electric                          | Control S. D. Field New York, N. Y.    |
| 274,988 | Secondary Battery Element                               | C. F. Brush, Cleveland Ohio            |
| 275,380 | Telegraph Automatic Printing                            | A. L. & F. P. Johnson, Brooklyn N. Y.  |
| 275,344 | Telegraph Duplex                                        | J. E. Felt, Elizabeth, N. J.           |
| 275,185 | Telegraphs, Improved Means for Quadruplex               | G. W. Carhart, Brooklyn N. Y.          |
| 275,186 | Telegraph Conductors Supporting and Pressing            | J. H. Green, Brooklyn, N. Y.           |
| 275,187 | Telegraph Receiving Instrument for Quadruplex           | S. D. Field New York, N. Y.            |
| 275,188 | Telegraph Speaking                                      | S. D. Field New York, N. Y.            |
| 275,310 | Telephone Transmitter                                   | E. L. Wilson, Boston Mass              |
| 275,380 | Telephone Circuits, Automatic Signaling Apparatus for   | T. N. Vail Boston, Mass                |

APRIL 10TH.

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|---------|----------------------------------------------------|---------------------------------------------------|
| 275,516 | Electricity Light.                                 | G. J. Murdock, Binghamton, N. Y.                  |
| 275,507 | Electric Cable.                                    | W. J. Phelps, and G. L. Kitson, Philadelphia, Pa. |
| 275,421 | Electric Ho.                                       | S. F. Shepley, New York, N. Y.                    |
| 275,423 | Electric Cables, Submarine.                        | S. F. Shepley, New York, N. Y.                    |
| 275,408 | Electric Cables, Machine for Manufacturing.        | W. J. Phelps, and G. L. Kitson, Philadelphia, Pa. |
| 275,448 | Electric Motor, Flexible.                          | S. Bingham, New York, N. Y.                       |
| 275,741 | Electric Light Fixtures, Connector for.            | S. Bingham, New York, N. Y.                       |
| 275,440 | Electric Light Switch.                             | T. G. Tuttle, New York, N. Y.                     |
| 275,432 | Electric Machine, Dynamo.                          | A. F. Knecht, Boston, Mass.                       |
| 275,510 | Electric Machine, Dynamo.                          | C. J. Van Dusen, Chicago, Ill.                    |
| 275,608 | Electric Signaling Apparatus.                      | C. C. Adams, Virginia City, Nevada.               |
| 275,476 | Electric Conductor, Underground.                   | J. Kraus, Brooklyn, N. Y.                         |
| 275,317 | Electric Machine, Triangular.                      | P. Atkinson, Chicago, Ill.                        |
| 275,791 | Electric Wire Connector.                           | J. F. Martin, Chicago, Ill.                       |
| 275,744 | Electric Washer and Motor.                         | C. F. Ross, New Haven, Conn.                      |
| 275,422 | Insulating Compound for Electric Conductors.       | S. F. Shepley, New York, N. Y.                    |
| 275,423 | Insulating Submarine Electric Cables, Machine for. | S. F. Shepley, New York, N. Y.                    |
| 275,415 | Lamp, Electric.                                    | J. B. Allen, Springfield, Ill.                    |
| 275,613 | Lamp, Incandescent, Electric.                      | T. A. Fessenden, Monticello Park, N. J.           |
| 275,412 | Lamps, Manufacturing Machine for.                  | T. A. Fessenden, Monticello Park, N. J.           |
| 275,430 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,431 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,432 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,433 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,434 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,435 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,436 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,437 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,438 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,439 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,440 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,441 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,442 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,443 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,444 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,445 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,446 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,447 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,448 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,449 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,450 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,451 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,452 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,453 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,454 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,455 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,456 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,457 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,458 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,459 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,460 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,461 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,462 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,463 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,464 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,465 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,466 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,467 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,468 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,469 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,470 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,471 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,472 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,473 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,474 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,475 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,476 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,477 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,478 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,479 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,480 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,481 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,482 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,483 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,484 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,485 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,486 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park, N. J.           |
| 275,487 | Lamps, Arc, Manufacturing Machine for.             | T. A. Fessenden, Monticello Park                  |

APRIL 15th.

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|---------|-----------------------------------------------------------------------------------------------------------------|
| 270,123 | Electric Light, Incandescent. T. L. Clingman, Asheville, N. C.                                                  |
| 270,003 | Electric Machine, Dynamo. W. Morera, Chicago, Ill.                                                              |
| 270,842 | Electric Motors, Speed Regulator and Reversing Device for. E. Madera, R. and J. C. Cochran, San Francisco, Cal. |
| 275,797 | Carbon Battery. W. A. Alexander, Mobile, Ala.                                                                   |
| 275,835 | Carbon Battery. J. B. Kell, Chicago, Ill.                                                                       |
| 275,134 | Interlocking Switch and Signal Electric. O. Cassett, and I. Fisher, Boston, Mass.                               |
| 276,120 | Interlocking Signal Electric. S. C. Henderson, Brooklyn, N. Y.                                                  |
| 276,121 | Interlocking Signal Electric Apparatus. O. Cassett, Boston, Mass.                                               |
| 275,877 | Interlocking Signal Electric Apparatus. C. M. Redinger, Jr., Erlanger, Ky.                                      |
| 275,083 | Secondary Battery. C. F. Brush, Cleveland, Ohio.                                                                |
| 275,389 | Secondary Battery. C. F. Brush, Cleveland, Ohio.                                                                |
| 275,088 | Secondary Secondary Battery. C. F. Van Dusen, Chicago, Ill.                                                     |
| 275,854 | Telephone Cables, Apparatus for Extending. J. J. Robertson, Brooklyn, N. Y.                                     |
| 276,086 | Telephone Battery. J. J. Robertson, Brooklyn, N. Y.                                                             |
| 276,116 | Telephone Transmitter Electric Signal Apparatus for. D. Drawbaugh, Flerty's Mill, Pa.                           |
| 276,117 | Telephone Transmitter. D. Drawbaugh, Flerty's Mill, Pa.                                                         |

At all, 2474.

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|---------|--------------------------------|--------------------------------------------------|
| 276,216 | Electric Circuit Switch Board  | F Blake, Weston, Mass                            |
| 276,228 | Electric Outboard              | E. M. Avery, Cleveland, O.                       |
| 276,240 | Electric Outboard              | J. H. Rhoads, Truckee, N. Y.                     |
| 276,255 | Electric Converter Dynamometer | C. Lock and W. H. Chapman, Middlebury, Vt.       |
| 276,114 | Electric Machine Dynamometer   | H. E. Roberts, York, Pa.                         |
| 276,116 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,260 | Electric Windmill              | J. E. Thompson and J. E. Cook, Philadelphia, Pa. |
| 276,262 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,264 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,266 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,268 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,270 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,272 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,274 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,276 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,278 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,280 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,282 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,284 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,286 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,288 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,290 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,292 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,294 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,296 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,298 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |
| 276,300 | Electric Windmill              | J. A. M. Lecky, Farmington, Pa.                  |

# HA. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

- Secondary Battery.** C. F. Brush, Cleveland, Ohio.  
**Secondary Battery Element.** C. F. Brush, Cleveland, Ohio.  
**Secondary or Storage Battery.** E. T. and E. E. Starr, Philadelphia, Pa.  
**Secondary or Storage Battery.** E. T. and E. E. Starr, Philadelphia, Pa.  
**Telegraph Line, Underground.** N. M. Rittenhouse, and M. W. Locke, Baltimore, Md.  
**Telephone and Telegraph Switches, Electric Time Register for.** F. E. Kinsman, New York, N.Y.  
**Telephone Call Indicator.** J. M. Provost, Buffalo, N.Y.

## MAY 1st.

- Annunciator, Telephonic.** G. L. Weaver, Boston, Mass.  
**Electric Call.** J. B. Currier, and D. H. Rice, Lowell, Mass.  
**Electric Machines, Armature for Dynamo.** L. Daft, Greenville, N.J.  
**Electric Way.** E. M. Bentley, Washington, D.C.  
**Electric Way.** E. M. Bentley, Washington, D.C.  
**Electric Way.** E. M. Bentley, and W. H. Knight, Washington, D.C.  
**Electric Way.** W. H. Knight, and E. M. Bentley, Washington, D.C.  
**Electrical Conductor.** T. S. Reed, Bridgeport, Conn.  
**Electrical Purposes, Covering Wire for.** J. J. C. Smith, College Point, N.Y.  
**Electrical Purposes, Machine for Covering Wire for.** J. J. C. Smith, College Point, N.Y.  
**Heating Apparatus, Electrical.** A. Lieberman, and W. Robb, Philadelphia, Pa.  
**Insulating Electrical Conductors.** J. G. Sanderson, Scranton, Pa.  
**Insulating Conductors and a New Compound, suitable to be used for this and other purposes.** W. Smith, Wharf Road, City Road, County of Middlesex, England.  
**Insulator for Telegraph Wires.** J. S. Lewis, Birkenhead. County of Chester England.  
**Lamp, Electric-arc.** L. Daft, Greenville, N.J.  
**Lamp, Electric-arc.** L. Daft, Greenville, N.J.  
**Lamp, Electric-arc.** L. Daft, Greenville, N.J.  
**Lamp, Incandescent Electric.** P. Diehl, Elizabeth, N.J.  
**Lamp, Voltaic-arc.** O. A. Moses, New York, N.Y.  
**Lamp, Voltaic-arc.** O. A. Moses, New York, N.Y.  
**Lamp, Voltaic-arc.** O. A. Moses, New York, N.Y.  
**Lamps, Glass Bulb or Globe for Incandescent Electric.** A. Swan, Gateshead, County of Durham, England.  
**Railway, Electric.** L. Daft, Greenville, N.J.  
**Railway Signal, Electric.** A. W. Hall, Meriden, Conn.  
**Secondary Battery Plate.** C. H. Koyl, Baltimore, Md.  
**Telephone Call, Individual.** J. A. Lakin, Westfield, Mass.  
**Telephone, Electric.** J. H. Robertson, New York, N.Y.  
**Telephone, Electric.** J. H. Robertson, New York, N.Y.  
**Telephone Receiver.** G. E. Shaw, Chicago, Ill.  
**Telephone Transmitter, Electric.** J. H. Robertson, Brooklyn, N.Y.  
**Voltaic-arc Light.** O. A. Moses, New York, N.Y.

## MAY 8TH.

- Annunciator and Communicating Apparatus, Electric.** W. Humans, Cambridgeport, Mass.  
**Burglar Alarm, Ringing.** A. W. Lawson, Midway, Ala.  
**Clock Winding Device, Electric.** G. F. Ballou, Waltham, Mass.  
**Electric Conductor or Cable, Underground.** J. B. Hyde, New York, N.Y.  
**Electric Conductors, Manufacture of Silicious Copper and Bronze for making.** L. Weiller, Angoulême, Charente, France.  
**Electric Divining Rod.** C. F. Varley, Bexley Heath, County of Kent, England.  
**Electric Machine, Dynamo.** J. A. I. Craig, Montreal, Quebec, Canada.  
**Electric Machine, Dynamo.** J. A. I. Craig, Montreal, Quebec, Canada.  
**Electric Machines, Armature for Dynamo.** L. Daft, Greenville, N.J.  
**Electrical Conductor.** S. D. Strohm, Philadelphia, Pa.  
**Fire Alarm Box, Electric.** B. Frese, Chicago, Ill.  
**Gas by Electricity, Device for Lighting.** J. B. Odell, Chicago, Ill.  
**Insulated Conductor of Electricity, Electro-plated.** N. H. Edgerton, Philadelphia, Pa.  
**Insulated Electrical Conductor.** W. Smith, Wharf Road, City Road, County of Middlesex, England.  
**Lamp, Electric-arc.** A. Shedlock, Brooklyn, N.Y.  
**Lamp, Electric-arc.** A. Shedlock, Brooklyn, N.Y.  
**Lamp Holder, Electric.** A. Shedlock, Brooklyn, N.Y.  
**Lamp Hood, Electric.** S. H. Tacy, New York, N.Y.  
**Magneto-electric Machine.** C. A. Seeley, New York, N.Y.  
**Railway Signals, Circuit Instrument for Electric.** J. Weis, Jersey City, N.J.  
**Railway Trains, Electric Signaling Apparatus for.** F. A. Shaw and H. E. Judkins, Portland, Me.  
**Speed Indicator, Magnetic.** E. Weston, Newark, N.J.  
**Telegraph, Automatic.** J. H. Rogers, Washington, D.C.  
**Telegraph Cable, Splice.** W. R. Patterson, Chicago, Ill.  
**Telegraph Line, Underground.** W. Cohlman, Philadelphia, Pa.  
**Telephone.** H. Clay, Philadelphia, Pa.  
**Telephone, Receiving.** M. L. Baxter, Aurora, Ill.  
**Telephone, Receiving.** M. L. Baxter, Aurora, Ill.  
**Telephonic and other Electrical Purposes, Line Changer for.** C. H. Lothrop, Lyons, Iowa.  
**Thermostat.** W. G. Day, Baltimore, Md.

## MAY 15TH.

- Burglar Alarm, Ringing.** T. E. James, Rochester, N.Y.  
**Circuit Controller Device.** E. Weston, Newark, N.J.  
**Electric Cable Support.** A. Wright, Providence, R.I.  
**Electric Lock.** M. Sullivan, Brooklyn, N.Y.  
**Electric Machine, Dynamo.** E. Weston, Newark, N.J.  
**Electric Wires, Laying Underground.** J. Marks, Newark, N.J.  
**Electro-magnetic Engine.** G. W. Foster, New York, N.Y.  
**Gas Lighting, Electric.** T. H. Rhodes, Brooklyn, N.Y.  
**Head Light for Locomotives, etc., Electric.** F. Ball, Jr., Cincinnati, Ohio.  
**Insulating Wires for Electric Purposes.** J. J. C. Smith, College Point, N.Y.  
**Lamp and Holder, Electric.** E. Weston, Newark, N.J.  
**Lamp and Holder therefor, Electric.** E. Weston, Newark, N.J.  
**Lamp Bracket, Electric Incandescent.** E. Weston, Newark, N.J.  
**Lamp Bracket, Electric Incandescent.** E. Weston, Newark, N.J.  
**Lamp Carbons, Manufacturing Incandescent.** H. S. Maxim, Paris, France.  
**Lamp Fixture, Electric.** E. Weston, Newark, N.J.  
**Measuring and Recording Electric Currents, Apparatus for.** J. Hopkinson, Westminster Chambers, County of Middlesex, England.  
**Railway Signal, Telegraphic.** R. M. Hunter, Philadelphia, Pa.  
**Secondary Battery.** E. Boettcher, Leipsic, Germany.



## J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVE

MAY 22ND

- 278,160 Clock System, Electric Pneumatic. C A Mayerhofer, Paris, France  
278,277 Electric Cables, Device for Suspending. H C Root and J. C. Reilly, Philadelphia, Pa.  
278,078 Electric Machine, Dynamo. C E Ball, Philadelphia, Pa.  
278,113 Electric Machine, Dynamo. G W Foster, Norwich, Conn.  
278,120 Electric Machine, Dynamo. G W Fuller, Norwich, Conn.  
278,121 Electric Machine, Dynamo. G W Fuller, Norwich, Conn.  
278,122 Electric Machine, Dynamo. G W Fuller, Norwich, Conn.  
278,233 Electric Wire Duct. J C Goodbridge, Jr., New York, N.Y.  
278,100 Electric Wire, Machine for Covering. W Hayward, Providence, R.I.  
278,095 Electric Wires, Carbons and Sidewalk Contact for. E Clark, Jersey City, N.J.  
278,290 Electrical Conductor. S D Strohm, Philadelphia, Pa.  
277,964 Fire Alarms, Automatic Circuit Closes for Electric. J O Welch, Des Moines, Iowa.  
278,067 Insulating Underground Electric Wires. W M Brishen, Philadelphia, Pa.  
278,291 Lamp, Electric-arc. W M Thomas, Cincinnati, Ohio.  
278,304 Lamp Regulator, Electric-arc. A I Gravier, Paris, France  
278,023 Lightning Rod. A C Loddell, Chicago, Ill.  
278,081 Telephone Transmitter. J A Lakin, Westfield, Mass.

MAY 29TH.

- 278,356 Carbon Plates, Apparatus for Making E. J. Mclera and J. C. Cebrian, San Francisco, Cal.  
278,418 Electric Currents from High to Low Tension. Apparatus for Translating T. A. Edison, Menlo Park, N. J.  
278,426 Electric Light Conductors, Support for L. Sturtevant, New York, N. Y.  
278,516 Electric Machine, Dynamo A. E. Delafield, Northampton, Conn.  
278,410 Electric Machine, Dynamo T. A. Edison, Menlo Park, N. J.  
278,641 Electric Machine, Dynamo E. Weston, Newark, N. J.  
278,413 Electric Machine Regulator, Dynamo T. A. Edison, Menlo Park, N. J.  
278,414 Electric Machine Regulator, Dynamo T. A. Edison, Menlo Park, N. J.  
278,640 Electric Machine Regulator, Dynamo E. Weston, Newark, N. J.  
278,833 Electric Switch Board W. J. M. Frey, Pittsburgh, Pa.  
278,835 Electrical Conductors, Protector Attachment for W. E. Townsend, Jr., Brooklyn, N. Y.  
278,946 Electrical Compensator H. F. Long, London, Ontario, Canada.  
278,835 Electrical Distribution System of F. T. Greenfield, New York, N. Y.  
278,638 Electrodes for Secondary Batteries, Making W. Wallace Atkinson, Conn.  
278,520 Insulating Material, Electrical J. Graves, Paterson, N. J.  
278,618 Insulator Brackets, Machine for making Telegraph J. B. Smith, Sanapee, N. H.  
278,619 Insulator Pins, Machine for Making Telegraph J. B. Smith, Sanapee, N. H.  
278,642 Lamp Bracket or Fixture, Incandescent E. Weston, Newark, N. J.  
278,415 Lamps, Manufacture of Incandescent, Electric T. A. Edison, Menlo Park, N. J.  
278,416 Lamps, Manufacture of Incandescent, Electric T. A. Edison, Menlo Park, N. J.  
278,417 Lamps, Manufacture of Incandescent, Electric T. A. Edison, Menlo Park, N. J.  
278,351 Telephone Current J. A. McCoy, F. J. River, Mass.  
278,367 Telephone, Exchange Circuit C. E. Scribner, Chicago, Ill.  
278,615 Telephone Exchange System and Apparatus F. Shaw, New York, N. Y., and W. A. Childe, England.  
278,722 Telephone Signaling Apparatus W. J. Dudley, Boston, Mass.  
278,414 Telephone Switch H. W. Duckenridge, Providence, R. I.  
278,367 Telephone Time Signal J. M. Orin, Dallas, Texas.  
278,411 Telephonically, System, and Apparatus for Communicating C. T. Dickson, Cincinnati, Ohio.  
278,505 Toy, Electric R. Lembecke, Hoboken, N. J.

JUNE 5TH

- 276,946 Clock Movement, Electric J Happersberger Cincinnati, Ohio.  
276,981 Electric Apparatus, Commutator for W H Chapman, Middlebury, Vt.  
276,840 Electric Circuit and Apparatus for Synchronizing Clock Pendulums H L Bailey, Brooklyn, N Y.  
279,023 Electric Control Operator, Automatic W H Sawyer Providence, R I.  
278,981 Electric Machine, Dynamo A M Larsen and H H Foster New York, N Y.  
279,007 Electric Motor C C Peck and W H Chapman, Middlebury, Vt.  
279,008 Electric Motor C C Peck and W H Chapman, Middlebury, Vt.  
279,030 Electric Motor H W Spring Reading, Pa.  
278,811 Electric Wire C McIntire Newark, N J.  
278,884 Electric Wire Protector J O Cottrell Fanwood, N J.  
279,000 Electrical Apparatus for Automatic Signaling J C Wilson, Boston, Mass.  
278,885 Electrical Wire Protector J O Cottrell, Fanwood, N J.  
279,045 Electro-magnetic Motor W M Thomas, Cincinnati, Ohio.  
278,750 Electro-magnetic Motor, Rotary J B Atwater Chicago, Ill.  
278,753 Insulating Telegraph Wires T A Smith, Chicago, Ill.  
278,679 Lamp Circuit Arr C B Bosworth and F A Swan, Boston, Mass.  
278,832 Lamp, Electric P Tibson, Evans, Illinois.  
279,103 Lamp, Electric-arc J Olmsted, New York, N Y.  
278,797 Lamp Support Electric A J Ho, Springfield, Ill.  
278,940 Railway Signal, Electric W Hallen Brooklyn, N Y.  
279,046 Storage Battery C T Torckhaus, New York, N Y.  
278,888 Telegraph and Telephone Cable C Haik, New Orleans, La.  
278,750 Telephone Lamp, Angle-hanger for Mechanism G F Shaver, Erie, Pa.

JUNE 12TH.

- |         |                                         |                                                                     |
|---------|-----------------------------------------|---------------------------------------------------------------------|
| 279,315 | Brush, Electric                         | J N Aronson, London, England                                        |
| 279,483 | Burglar Alarm Circuit                   | Chas W C Fish, Boston, Mass                                         |
| 279,400 | Carbon Plates, Mfg. Factory of Porous   | C H & J Baltimore, Md                                               |
| 279,280 | Clock, Electro-magnetic, Motor for      | H Götze, Chemnitz, Prussia, Germany                                 |
| 279,180 | Electric Calculator                     | J W Rogers, New York, N Y                                           |
| 279,221 | Electric Light for Chases               | Springfield, Mass                                                   |
| 279,166 | Electric Machine, Dynamic               | H L Felt, New York, N Y                                             |
| 279,802 | Electric Machine, Dynamic               | N H Baker, Philadelphia, Pa                                         |
| 279,394 | Electric Machine, Apparatus for Dynamic | F J Knowlton, Brooklyn, N Y, and P E Hoff, Hingham, Mass            |
| 279,282 | Electric Wave Length Standard           | Joseph H H Johnson, Philadelphia, Pa                                |
| 279,100 | Electricity for Sewing Machine          | N C Jackson, Newcastle upon Tyne, County of Northumberland, England |
| 279,322 | Electricity for Sewing Machine          | Walter C A Hammond, Chicago, Ill                                    |
| 279,162 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,163 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,164 | Light, Electric                         | N H Baker, Philadelphia, Pa                                         |
| 279,165 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,166 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,167 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,168 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,169 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,170 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,171 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,172 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,173 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,174 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,175 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,176 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,177 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,178 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,179 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,180 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,181 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,182 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,183 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,184 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,185 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,186 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,187 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,188 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,189 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,190 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,191 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,192 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,193 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,194 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,195 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,196 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,197 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,198 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,199 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |
| 279,200 | Light, Electric                         | J J Wood, Brooklyn, N Y                                             |



# A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

JUNE 19TH.

- 1 Belt, Electro-galvanic. G. E. Palmer, Boston, Mass.
- 5 Electric-arc Lighting System. R. J. Sheehy, New York, N.Y.
- 4 Electric Circuit Cut-out. A. L. Bogart, Jamaica, N.Y.
- 6 Electric Machines, Combined Current Indicator and Commutator Adjuster for Dynamos. R. J. Sheehy, New York, N.Y.
- 6 Electrical Conductors, Underground System of Laying. J. E. Hamilton, New York, N.Y.
- 3 Electrical Instrument Protector. M. D. Connolly, Philadelphia, Pa. and T. A. Connolly, Washington, D.C.
- 7 Electrical Switch Board Plug. E. Flint, Jr., Boston Mass.
- 2 Galvanic Battery. T. L. Kauffer and J. Seron, Boston, Mass.
- 4 Insulator, Electrical (re-issue). D. M. Stewart, Cincinnati, Ohio.
- 7 Lamp, Electric-arc. H. Ansot, New York, N.Y.
- 4 Lamp, Electric-arc. R. J. Sheehy, New York, N.Y.
- 1 Lamp, Incandescent. C. Richter, Camden, N.J.
- 9 Secondary Electric Battery. E. T. Starr, Philadelphia, Pa.
- 9 Signal and Messenger Call Box, District. E. W. Applegate, Washington, D.C.
- 0 Telegraph Alarm, Printing. S. D. Field, New York, N.Y.
- 1 Telegraph, Printing. E. V. Essick, Alliance, Ohio.
- 9 Telegraph, Printing. S. D. Field, New York, N.Y.
- 5 Telegraph Printing. S. D. Field, New York, N.Y.
- 2 Telegraphic and Telephonic Instruments, Protector for. M. D. Connolly, Philadelphia, Pa.
- 4 Telegraphic and Telephonic Instruments, Protector for. M. D. Connolly, Philadelphia, Pa.
- 5 Telegraphic and Telephonic Instruments, Protector for. M. D. Connolly, Philadelphia, Pa.
- 0 Telegraphic Repeater. J. P. Smithers, Brooklyn, N.Y.
- 7 Telephone Switch Board. E. B. Hamlin, Chicago, Ill.

JUNE 26TH.

- 6 Annunciator, Telephone. F. B. Hazlett, Freeport, Ill.
- 6 Car for Locomotives, Electrical Pilot. S. H. Knapp and A. E. Adams, Danbury, Conn.
- 1 Electric Generator, Dynamo. I. Fisher, Medford, Mass.
- 9 Electric Machine, Dynamo. J. Hopkinson and A. Muirhead, Westminster, England.
- 8 Electric Machines, Commutator for Dynamo. F. M. Brown, Boston, Mass., and C. B. Bosworth, Everett, Mass.
- 7 Electric Wire, Conduit. S. Parker, Chicago, Ill.
- 8 Insulated Electric Conductor. G. S. Eaton, Brooklyn, N.Y.
- 4 Insulator and Lightning Arrestor, Combined. J. E. Noble, Mulberry, Ohio.
- 4 Lamp, Electric-arc. F. S. Geil, Brooklyn, N.Y.
- 7 Lamp, Incandescent Electric. R. H. S. Thompson, Lexington, Ky.
- 9 Railway Signal, Electric. D. C. Farrington, Lowell, Mass.
- 8 Telegraphy, Duplex and Multiplex. G. W. Gardanier, Brooklyn, N.Y.
- 8 Telephone Exchange Apparatus. T. A. Watson, Everett, Mass.
- 6 Telephone Receiver, Adjustable Double. D. G. Barnard, Winslow, N.J.
- 7 Type-writer, Electrical. J. A. Parks and G. V. Sheffield, New York, N.Y.

JULY 3RD.

- 8 Burglar Alarm Attachment for Automatic Signaling Apparatus, Electric. W. F. Chester, New York, N.Y.
- 2 Burglar Alarm, Electric. O. A. Helman, Cincinnati, Ohio.
- 1 Electric Cable. W. H. Sawyer, Providence, R.I.
- 4 Electric Cable or Conductor. L. A. F. Herrmann, Paris, France.
- 4 Electric Cables, Machine for making. E. E. and E. G. Rafer, S. Chamond, France.
- 8 Electric Conductor or Cable. J. W. Rogers, New York, N.Y.
- 7 Electric Light. F. L. Senour, New Alexandria, Pa.
- 8 Electric Machine, Dynamo. F. Bain, Minneapolis, Minn.
- 9 Electric Machine, Dynamo. R. E. Ball, New York, N.Y.
- 7 Electrical Distribution, System of. T. A. Edison, Menlo Park, N.J.
- 9 Gas Lighting Apparatus. J. H. Towan, Charlestown, Mass.
- 6 Insulated Electrical Conductor. T. H. Dunham, Boston, Mass.
- 51 Insulated Compound for Electric Wires (Re-issue). R. S. Waring, Pittsburg, Pa.
- 50 Insulating Material for Electrical Uses. R. S. Waring, Pittsburg, Pa., and J. B. Hyde, New York, N.Y.
- 49 Insulating Wires for Electric Uses, Process of, and Apparatus for. (Re-issue). R. S. Waring, Pittsburg, Pa., and J. B. Hyde, New York, N.Y.
- 41 Lamp Carbon, Incandescent Electric. A. Bernstein, Boston, Mass.
- 99 Lamp, Electric-arc. F. Bain, Minneapolis, Minn.
- 63 Lamp, Electric-arc. Y. Rabl, Camden, N.J.
- 40 Lamp, Incandescent Electric. A. Bernstein, Boston, Mass.
- 26 Lamp, Focus-regulator for Electric-arc. W. Wheeler, Concord, Mass.
- 60 Locomotive, Electro-magnetic. S. H. Beckwith, Utica, N.Y.
- 63 Measuring Apparatus, Electrical. C. S. Bradley, New York, N.Y.
- 66 Telegraph, Fire Alarm or District. W. B. Vansise, Brooklyn, N.Y.
- 16 Telegraph Lines, Automatic Roll-call for. W. P. Harris, S. Chicago, Ill.
- 53 Telegraphy, Duplex and Quadruplex. A. Muirhead, London, England.
- 51 Telephone Call Bell. H. Clay, Philadelphia, Pa.
- 32 Telephone Central Office Switch Board. T. J. Perrin, Brooklyn, N.Y.
- 51 Telephone Switch Board. H. Clay, Philadelphia, Pa.
- 33 Telephone Switch Board. T. J. Perrin, Brooklyn, N.Y.
- 107 Telephone Systems, Automatic Indicator, Switch for. G. L. Anders, Boston Mass.
- 80 Telephone Transmitter. H. Clay, Philadelphia, Pa.
- 35 Telephonic Communication, Apparatus and System for. A. Dunand, Paris, France.

JULY 10TH.

- 48 Electric Carbon. H. Frasch, Cleveland, Ohio.
- 102 Electric Circuit Breaker, Automatic. L. J. Phelps, New York, N.Y.
- 23 Electric Conductor. H. D. Rogers, New York, N. Y.
- 50 Electric Light Tower. B. F. Orton, East Saginaw, Mich.
- 52 Electric Machine, Dynamo. J. E. Giles, Hazleton, Pa.
- 49 Electric Machines, Armature for Dynamo. W. P. Freeman, New York, N.Y.
- 69 Electric Underground Cable. F. A. Smith, Macomb, Ill.
- 30 Electric Wires, and Adjusting the Wires in the same Ventilating Conduit, for. W. Hendley, Washington, D.C.
- 19 Electric Wires, Conduit for Underground. J. Du Shane, South Bend, Ind.
- 97 Exercising Apparatus, Electrical. W. T. McGinnis, New York, N.Y.
- 06 Fire Extinguisher and Fire Alarm System, Electric. C. E. Buell, New Haven, Conn.
- 46 Furnace for the Manufacture of Carbon. H. Frasch, Cleveland, Ohio.
- 33 Galvanic Battery. W. W. Karshner, Washington, D.C.
- 47 Insulator for Electrical Conductors. P. C. Ohl, Plainfield, N.J.

## J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISEMENTS

- 280,882 Liqueurs with Electricity, Treating, Alcohol—A. C. Tichenor, Alameda, Cal.  
281,176 Measuring the Current Energy received by a Secondary Battery Apparatus for C. F. Brush, Cleveland,  
281,221 Meters Electrically Heated—B. H. Goodson, C. A. Lister and C. O. Hering, Philadelphia, Pa.  
281,175 Secondary Battery Charging, Current Manipulator for C. F. Brush, Cleveland, Ohio.  
281,156 Secondary Battery or Electric Accumulator—E. F. Starr, Philadelphia, Pa.  
281,064 Telegraph and other Wires—Conduit for Undergrove and Lines for W. Hendley, Washington, D. C.  
281,117 Telegraph Quadruplex—A. Murhead, London, England.  
281,118 Telegraph Quadruplex—A. Murhead and G. K. Winter, London, Eng.  
280,916 Telegraph and Telephonic Protector—C. C. Drake, Trenton, N. J.  
280,918 Telephone Call—P. C. Oehl, Plainfield, N. J.  
281,000 Telephone Receiver—J. F. Batchelor, Baltimore, Md.  
280,800 Telephone Receiver—L. J. Crossley, Halifax, County of York, Eng.

## JULY 15TH.

- 281,576 Electric Light Circuits, Safety Catch for L. Sturinger, New York, N.Y.  
281,595 Electric Lights, Carbon Electrode for J. A. Moffitt, Arlington, Mass.  
281,410 Electric Machine, Dynamo F. Thomson, New Britain, Conn.  
281,353 Electric Machine, Dynamo or Magneto T. A. Edison, Menlo Park, N.J.  
281,349 Electric Machine Regulator Dynamo T. A. Edison, Menlo Park, N.J.  
281,350 Electric Machine, Regulator Dynamo T. A. Edison, Menlo Park, N.J.  
281,363 Electric Switch D. P. Heap U. S. Army  
281,351 Electric Generator T. A. Edison, Menlo Park, N.J.  
281,345 Gas Lamp with Electric C. H. Crockett, Boston, Mass.  
281,471 Gas-Light Electric W. A. Drysdale Philadelphia, Pa.  
281,452 Insulator Telegraph T. L. Chapman, Huntington, W. Va.  
281,229 Lamp Electric C. M. Hall, Troy, N.Y.  
281,412 Lamps, Automatic Regulator for Incandescent E. T. & E. E. Starr, Philadelphia, Pa.  
281,362 Telegraph Key Latching L. H. Hart, New York, N.Y.  
281,339 Telegraph, Multiplex L. A. Calahan, Brooklyn, N.Y., and P. B. Delany, New York, N.Y.  
281,243 Telegraph, Quadruplex G. D. Ingersoll, New York, N.Y.  
281,560 Telegraph, J. H. Rogers, New York, N.Y.  
281,407 Telephone, Acoustic C. Seidm, St. Louis, Mo.  
281,614 Telephone, Call Individual J. H. Cary, Boston, Mass.  
281,489 Telephone Circuit J. M. Stearns, Jr., Brooklyn, N.Y.  
281,414 Telephone, Electric J. M. Stearns, Jr., Brooklyn, N.Y.  
281,619 Telephone Exchange, Automatic G. A. Carlwell, Brooklyn, N.Y.  
281,406 Telephone, Mechanical C. Seidm, St. Louis, Mo.  
281,381 Telephone, Support C. T. Loring, Boston, Mass.  
281,418 Telephone System and Apparatus T. H. Farnham, Portland, Me.  
281,240 Telephone Transmitter T. H. Cheever, Somerville, Mass.  
281,470 Telephones, Individual Signaling, Apparatus for J. H. Cary, Boston, Mass.  
281,579 Valve-gear for Steam Engines, Electric G. W. Storer, Philadelphia, Pa.

## JULY 24TH.

- |         |                                                                                                    |                                                                               |
|---------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| 281,766 | Automatic Printing Telegraph                                                                       | Francesco Ostrogovitch, Florence, Italy.                                      |
| 281,770 | Automatic Cut-out for Electric Circuits                                                            | Robert I. Shochy, New York                                                    |
| 281,817 | Automatic Electric Switch                                                                          | Henry W. Spang, Reading, Pa.                                                  |
| 282,016 | Circuit for Inducings and Wires                                                                    | Theodore A. P. Parrish, New York, N. Y.                                       |
| 281,834 | Dynamo and Magnet-electric Machine                                                                 | John M. M. Mahon, Jersey City, N. J.                                          |
| 281,885 | Dynamo-electric Machine                                                                            | Edgar A. Edwards, Cincinnati, O.                                              |
| 281,912 | Electric Railway                                                                                   | Francis B. Crocker, Charles C. Carter and Scholey S. Wheeler, New York, N. Y. |
| 281,920 | Electric Fire Alarm and Control System                                                             | Charles Henry Frank, Amsterdam, N. Y.                                         |
| 281,999 | Electric Arc Lamp                                                                                  | Northam S. Keith                                                              |
| 281,900 | Electric Light Regulator                                                                           | Robert I. Shochy, New York, N. Y.                                             |
| 281,907 | Electric Temperature Indicator                                                                     | Edith Hewitt, Jr., New York, N. Y.                                            |
| 281,994 | Electric Telegraphic System                                                                        | Warren S. Johnson, Whitewater, Wis.                                           |
| 281,811 | Electric Wire Laying                                                                               | John Isa, London, County of Middlesex, England.                               |
| 281,911 | Electric Call Apparatus                                                                            | Charles S. Shaler, Brooklyn, N. Y.                                            |
| 282,016 | Electric Arc Lamp and Fire Alarm                                                                   | Samuel V. Unsicker, Brooklyn, N. Y.                                           |
| 282,841 | Insulator, Electric Conductor                                                                      | Alfred A. Cowles, New York, N. Y.                                             |
| 281,990 | Insulating Compound for Electric Conductors and Apparatus for Compounding and Applying the same    | James Hyde, New York, N. Y.                                                   |
| 281,741 | Spring Lock Switch for Telephone Exchange                                                          | James C. Warner, Chicago, Ill.                                                |
| 281,723 | Lighting Arrangement for Electric Wires                                                            | Wm. R. Patterson, Chicago, Ill.                                               |
| 281,864 | Manufacture of Insulated Electric Conductors                                                       | Isaac F. Colyer, Ansonia, Conn.                                               |
| 281,799 | Railway Electric Circuit Controller                                                                | Yarnor C. Lockets, Troy, N. Y.                                                |
| 281,899 | Railway Electric Switch and Electric Indicator                                                     | James A. Cooper, Pittsburg, Pa.                                               |
| 281,722 | System of Laying Submarine Electric Cables                                                         | W. R. Patterson, Chicago, Ill.                                                |
| 281,895 | Transmitting Apparatus for Electric Lines                                                          | Thomas D. Lockwood, Malden, Mass.                                             |
| 281,904 | Manufacture of Insulated Electric Conductors                                                       | Isaac F. Colyer, Ansonia, Conn.                                               |
| 282,016 | Automatic and Electric Apparatus                                                                   | S. Van Buren, Brooklyn, N. Y. and H. H. Johnson, Hackensack, N. J.            |
| 281,991 | Electric Control Apparatus                                                                         | C. S. Sawyer, Brooklyn, N. Y.                                                 |
| 281,790 | Electric Circuits, Automatic Cut-out for                                                           | Robert I. Shochy, New York, N. Y.                                             |
| 281,880 | Electric Light Regulator                                                                           | Robert I. Shochy, New York, N. Y.                                             |
| 281,885 | Electric Machine, Dynamo                                                                           | Edgar A. Edwards, Cincinnati, Ohio.                                           |
| 281,801 | Electric Machine, Dynamo and Magnet                                                                | John M. M. Mahon, Jersey City, N. J.                                          |
| 281,995 | Electric Switch, Automatic                                                                         | Henry W. Spang, Reading, Pa.                                                  |
| 281,722 | Electric Conductors, System of Laying Submarine                                                    | W. R. Patterson, Chicago, Ill.                                                |
| 281,990 | Fire Alarm and Electric System                                                                     | Charles H. Frank, Amsterdam, N. Y.                                            |
| 281,845 | Insulating Electric Conductors                                                                     | Alfred A. Cowles, New York, N. Y.                                             |
| 281,994 | Insulated Electric Conductors, Manufacture of                                                      | Isaac F. Colyer, Ansonia, Conn.                                               |
| 281,990 | Insulating Compound for Electrical Conductors, and Apparatus for Compounding and Applying the same | James Hyde, New York, N. Y.                                                   |
| 281,999 | Lamp, Electric                                                                                     | Northam S. Keith, New York, N. Y.                                             |
| 281,901 | Lamp, Electric                                                                                     | John Isa, London, County of Middlesex, England.                               |
| 281,723 | Lighting Arrangement for Electric Wires                                                            | Wm. R. Patterson, Chicago, Ill.                                               |
| 281,912 | Railway Electric                                                                                   | Francis B. Crocker, Charles C. Carter and Scholey S. Wheeler, New York, N. Y. |
| 281,899 | Railway Electric Switch and Electric Indicator                                                     | James A. Cooper, Pittsburg, Pa.                                               |
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| 281,801 | Electric Machine, Dynamo and Magnet                                                                | John M. M. Mahon, Jersey City, N. J.                                          |
| 281,995 | Electric Switch, Automatic                                                                         | Henry W. Spang, Reading, Pa.                                                  |
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| 281,990 | Fire Alarm and Electric System                                                                     | Charles H. Frank, Amsterdam, N. Y.                                            |
| 281,845 | Insulating Electric Conductors                                                                     | Alfred A. Cowles, New York, N. Y.                                             |
| 281,994 | Insulated Electric Conductors, Manufacture of                                                      | Isaac F. Colyer, Ansonia, Conn.                                               |
| 281,990 | Insulating Compound for Electrical Conductors, and Apparatus for Compounding and Applying the same | James Hyde, New York, N. Y.                                                   |
| 281,999 | Lamp, Electric                                                                                     | Northam S. Keith, New York, N. Y.                                             |
| 281,901 | Lamp, Electric                                                                                     | John Isa, London, County of Middlesex, England.                               |
| 281,723 | Lighting Arrangement for Electric Wires                                                            | Wm. R. Patterson, Chicago, Ill.                                               |
| 281,912 | Railway Electric                                                                                   | Francis B. Crocker, Charles C. Carter and Scholey S. Wheeler, New York, N. Y. |
| 281,899 | Railway Electric Switch and Electric Indicator                                                     | James A. Cooper, Pittsburg, Pa.                                               |
| 281,994 | System of Laying Submarine Electric Cables                                                         | W. R. Patterson, Chicago, Ill.                                                |
| 281,895 | Transmitting Apparatus for Electric Lines                                                          | Thomas D. Lockwood, Malden, Mass.                                             |
| 281,904 | Manufacture of Insulated Electric Conductors                                                       | Isaac F. Colyer, Ansonia, Conn.                                               |
| 282,016 | Automatic and Electric Apparatus                                                                   | S. Van Buren, Brooklyn, N. Y. and H. H. Johnson, Hackensack, N. J.            |
| 281,991 | Electric Control Apparatus                                                                         | C. S. Sawyer, Brooklyn, N. Y.                                                 |
| 281,790 | Electric Circuits, Automatic Cut-out for                                                           | Robert I. Shochy, New York, N. Y.                                             |
| 281,880 | Electric Light Regulator                                                                           | Robert I. Shochy, New York, N. Y.                                             |
| 281,885 | Electric Machine, Dynamo                                                                           | Edgar A. Edwards, Cincinnati, Ohio.                                           |
| 281,801 | Electric Machine, Dynamo and Magnet                                                                | John M. M. Mahon, Jersey City, N. J.                                          |
| 281,995 | Electric Switch, Automatic                                                                         | Henry W. Spang, Reading, Pa.                                                  |
| 281,722 | Electric Conductors, System of Laying Submarine                                                    | W. R. Patterson, Chicago, Ill.                                                |
| 281,990 | Fire Alarm and Electric System                                                                     | Charles H. Frank, Amsterdam, N. Y.                                            |
| 281,845 | Insulating Electric Conductors                                                                     | Alfred A. Cowles, New York, N. Y.                                             |
| 281,994 | Insulated Electric Conductors, Manufacture of                                                      | Isaac F. Colyer, Ansonia, Conn.                                               |
| 281,990 | Insulating Compound for Electrical Conductors, and Apparatus for Compounding and Applying the same | James Hyde, New York, N. Y.                                                   |
| 281,999 | Lamp, Electric                                                                                     | Northam S. Keith, New York, N. Y.                                             |
| 281,901 | Lamp, Electric                                                                                     | John Isa, London, County of Middlesex, England.                               |
| 281,723 | Lighting Arrangement for Electric Wires                                                            | Wm. R. Patterson, Chicago, Ill.                                               |
| 281,912 | Railway Electric                                                                                   | Francis B. Crocker, Charles C. Carter and Scholey S. Wheeler, New York, N. Y. |
| 281,899 | R                                                                                                  |                                                                               |

JULY 31st.

- 242 Bell Pull, Electric. P. J. Wall, Lawrence, Mass.
- 243 Despatch Tube, Electro-magnetic. C. A. Cheever, New York, N.Y.
- 247 Electric Light Brackets, Joint for. C. H. Hinds, New York, N.Y.
- 248 Electric Light Joint. C. H. Hinds, New York, N.Y.
- 249 Electric Machine Dynamo. S. Z. De Ferranti, Richmond Gardens, Shepherd's Bush, County of Middlesex, England, and A. Thompson, Guilford Place, Russell Square, County of Middlesex, England.
- 250 Electric Machine, Dynamo. E. R. Knowles, Brooklyn, N.Y.
- 251 Electric Machines, Automatic Regulator for Dynamo. F. S. Giel, Brooklyn, N.Y.
- 252 Electricity, Apparatus for Lighting Cars by. G. D. Burton, New Ipswich, N.H.
- 253 Gas Burner, Electric Lighting. A. L. Bogart, Jamaica, N.Y.
- 254 Lamp, Electric-arc. E. R. Knowles, Brooklyn, N.Y.
- 257 Lamp Globe, Electric. G. D. Burton, New Ipswich, N.H.
- 260 Lamp, Incandescent, Electric. I. Adams, Jr., Boston Mass.
- 260 Lamp, Incandescent, Electric. E. R. Knowles, Brooklyn, N.Y.
- 272 Lamps, Manufacture of Incandescent. A. Swan, Gateshead, County of Durham, England.
- 279 Lightning Rod. T. H. Dodge, Worcester, Mass.
- 287 Magneto-electric Signaling Apparatus. T. A. Edison, Menlo Park, N.J.
- 287 Measuring Electric Currents, Apparatus for. S. Z. De Ferranti, Richmond Gardens, Shepherd's Bush, County of Middlesex, England, and A. Thompson, Guilford Place, Russell Square, County of Middlesex, England.
- 293 Ore Separator, Electric. H. Greve, St. Paul, Minn.
- 299 Railway Electric Signal Apparatus. C. A. Scott, Boston, Mass.
- 299 Railway Electric Signaling Apparatus. C. A. Scott, Boston, Mass.
- 299 Secondary Battery. E. T. Starr, Philadelphia, Pa.
- 299 Secondary Battery Indicator. E. Weston, Newark, N.J.
- 299 Secondary Electric Battery. C. J. Van Depoele, Chicago, Ill.
- 299 Telegraphs, Dynamo-electric Machine for Printing. S. D. Field, New York, N.Y.
- 299 Telegraphy, Dynamo. S. D. Field, New York, N.Y.
- 299 Telegraphy, Dynamo. S. D. Field, New York, N.Y.
- 299 Telegraphy, Dynamo. S. D. Field, New York, N.Y.
- 299 Therapeutic Apparatus, Electro. A. W. K. Andrews, Binghampton, N. Y., and C. R. Teed, Syracuse, N.Y.
- 299 Automatic Regulator for Dynamo-electric Machines. Franz S. Giel, Brooklyn, N.Y.
- 299 Apparatus for Lighting Cars by Electricity. George D. Burton, New Ipswich, N.H.
- 299 Apparatus for Measuring Electric Currents. Sebastian Ziani De Ferranti and Alfred Thompson, England.
- 299 Dynamo-electric Machine. Edward R. Knowles, Brooklyn, N.Y.
- 299 Device for Lighting Petroleum or gas Lamps. Paul Richter, Germany.
- 299 Dynamo-electric Machines for Printing Telegraphs. Stephen D. Field, New York, N.Y.
- 299-300 Dynamo Telegraphy. Stephen D. Field, New York, N.Y.
- 299 Electric Bell-pull. Frank J. Wall, Lawrence, Mass.
- 299 Electric-lighting Gas Burner. A. L. Bogart, Jamaica, N.Y.
- 299 Dynamo-electric Machines. Sebastian Ziani De Ferranti and Alfred Thompson.
- 299 Electric-arc Lamp. Edward R. Knowles, Brooklyn, N.Y.
- 299 Electric Lamp Globe. George D. Burton, New Ipswich, N.H.
- 299 Electric Ore-separator. Hermann Grove, St. Paul, Minn.
- 299 Electro-magnetic Dispatch-tube. Charles A. Chever, New York.
- 299 Electro Therapeutic Apparatus. Abiel W. K. Andrews, Binghampton, and Cyrus R. Teed, Syracuse, N.Y.
- 299 Incandescent Electric Lamp. Isaac Adams Jr., Boston, Mass.
- 299 Joint for Electric-light Brackets. Chas. H. Hinds, New York, N.Y.
- 299 Joint for Electric Light. Charles H. Hinds, New York, N.Y.
- 299 Lightning Rod. Thomas H. Dodge, Worcester Mass.
- 299 Manufacture of Incandescent Lamps. Alfred Swan, England.
- 299 Magneto-electric Signaling Apparatus. Thomas A. Edison, Menlo Park, N.J.
- 299 Ozone Apparatus. Henry D. Hall, New York.
- 299-300 Railway Electric Signal Apparatus. Charles A. Scott, Boston, Mass.
- 299 Secondary Battery. Eli T. Starr, Philadelphia, Pa.
- 299 Secondary Electric Battery. Charles J. Van Depoele, Chicago, Ill.
- 299 Incandescent Electric Lamp. Edward R. Knowles, Brooklyn, N.Y.

AUGUST 7th.

- 301 Electric Circuit Breaker. S. M. Plush, Philadelphia, Pa.
- 301 Electric Conductor Conduit. L. Bannister, Philadelphia, Pa.
- 301 Electrical Indicators, Unison Mechanism for. F. H. Snell, Washington, D.C.
- 301 Galvanic Battery. E. F. Schlosser, Hoboken, N.J.
- 301 Gas Burner, Electric. C. H. Hinds, New York, N.Y.
- 301 Gas Lighting and Extinguishing Device, Electric. L. S. White, Waterbury, Conn.
- 301 Insulators, Compound for Electric Wire. J. F. Martin, Chicago, Ill.
- 301 Lamp Fixture for Bracket, Electric. C. W. Holtzer, Brookline, Mass.
- 301 Lamp, Incandescent Electric. P. R. D. D'Humy, Carleton Mansions, Clapham Rise, County of Surrey, England.
- 301 Lamp, Incandescent Electric. E. R. Knowles, Brooklyn, N.Y., and F. E. Idell, Hoboken, N.J.
- 301 Lamps, Manufacture of Incandescent Electric. J. H. Guest, Brooklyn, N.Y.
- 301 Lightning Rod. T. H. Patee, Greencastle, Ind.
- 301 Telegraph Pole. T. Breen, Knowlton, Pa.
- 301 Telephone and Telegraph Wires, &c., Machinery for Covering. J. A. Sparling, London, County of Middlesex, England.
- 301 Telephone Cabinet. R. Busteed, Brooklyn, N.Y.
- 301 Telephone Central Office Apparatus. W. M. Brock, Shamokin, Pa.
- 301 Telephonic Circuit. W. H. Eckert, and J. A. Seely, New York, N.Y.
- 301 Battery Box or Vessel. Eli T. Starr, Philadelphia.
- 301 Conduit for Electric Conductors. Lamuel Bannister, Philadelphia.
- 301 Electric Gas Lighting and Extinguishing Device. Le Roy, S. White, Waterbury, Conn.
- 301 Electric Gas Burner, Charles H. Hinds, New York.
- 301 Electric Circuit Breaker. Samuel M. Plush, Philadelphia.
- 301 Fixture or Bracket for Electric Lamps. Charles W. Holtzer, Brookline, Mass.
- 301 Galvanic Battery. E. F. Schlosser, Hoboken, N.J.
- 301 Incandescent Electric Lamp. E. R. Knowles, Brooklyn, N.Y.
- 301 Lightning rod. Theodorus H. Patee, Greencastle, Ind.
- 301 Machinery for Covering Telephone and Telegraph Wires, &c. John Alexander Sparling, London, England.
- 301 Manufacture of Incandescent Electric Lamps. John H. Guest, Brooklyn, N.Y.
- 301 Telegraph Pole. Thomas Breen, Knowlton, Pa.
- 301 Telephone Central Office Apparatus. W. M. Brock, Shamokin, Pa.
- 301 Telephone Cabinet. Richard Busteed, Brooklyn, N.Y.
- 301 Incandescent Electric Lamp. Paul Ragoul de Faucheux d'Humy, Clapham Rise, Surrey, England.
- 301 Telephone Circuit. Wm. H. Eckert and John A. Seely, New York, N.Y.
- 301 Unison Mechanism for Electrical indicators. Frank H. Snell Washington.



## J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTI

AUGUST 14TH.

- 283,355 Electric Battery C. P. Orin, Cambridge, Mass.  
283,152 Electric Circuit Break Instrument Charles A. Scott, Boston, Mass.  
283,167 Electric Commutator or Switch E. Thomson, New Britain, Conn.  
283,343 Electric Machine, Dynamo E. J. Houston, Philadelphia, Pa.  
283,175 Electric Machine, Regulator, Dynamo R. J. Shesky, New York, N. Y.  
283,541 Insulator, Preserve and Protect Wire for Electrical Purposes, Composition to D. B. Turner, Chicago, Ill.  
282,880 Insulators, Apparatus for Making Glass M. Johnson, Ellenville, N. Y.  
283,186 Lamp, Electric F. Bain, Union City, Ind.  
283,168 Lamp, Electric F. Thomson, New Britain, Conn.  
283,012 Lamp, Electric, W. M. Thomas, Cincinnati, Ohio.  
283,270 Lamp, Incandescent Electric S. D. Mott, Menlo Park, N. J.  
283,168 Reel, Insulated Metallic H. C. Thomas, Rock View, N. Y.  
283,295 Secondary Battery F. T. Starr, Philadelphia, Pa.  
283,043 Speaking Tubes, Electrical Indicator for J. Capron, New York, N. Y.  
283,210 Switch and Signal Levers, Electric Locking Mechanism for O. Gannett, Boston, Mass.  
283,140 Telegraph Lines, Ground Wire Clamp for H. W. Pope, Elizabeth, N. J.  
282,999 Telephone C. Egan, Zanesville, Ohio.  
283,334 Telephone Central Office Apparatus L. B. Firman, Chicago, Ill.  
283,012 Telephone Lines, Sprink-jack and Circuit for Through C. H. Wilson, Chicago, Ill.  
283,354 Telephone Local Call Instrument W. Nichols, Boston, Mass.  
283,032 Telephone, Speaking F. Blake, Jr., Weston, Mass.  
283,129 Telephone Transmitter W. C. Lockwood, Brooklyn, N. Y.  
282,964 Tin from Filings by Electricity, Removing J. L. Delaplaine, J. G. Hendrickson, F. J. Clamer, Philadelphia, Pa.  
283,200 Wires, Composition for Coating and Insulating Underground H. R. Brumett and J. Howe, Tyngsboro, Mass.  
283,500 Annunciator Electric E. Hunt, Jr., Boston, Mass.  
283,443 Electric Conductor H. D. Stanley, and C. Deolittle, Bridgeport, Conn.  
283,448 Electric Machine, Dynamo A. M. Loryn and C. H. Palmer, New York, N. Y.  
283,508 Electric Machine, Dynamo E. Weston, Newark, N. J.  
283,624 Electric Machines, Armature for Dynamo J. T. Lasten, Cleveland, Ohio.  
283,547 Electrical Meter E. Weston, Newark, N. J.  
283,736 Electric Signaling Device W. S. Johnson, Washington, D. C.  
283,546 Electric Magnet Motor E. Weston, Newark, N. J.  
283,482 Lamp, Electric C. D. Haskins, New York, N. Y.  
283,620 Lamp, Electric H. S. Maxon, Brooklyn, N. Y.  
283,487 Lamp, Electric E. Thomson, New Britain, Conn.  
283,689 Lamp, Electric, C. Richter, Camden, N. J.  
283,635 Telegraph, Automatic G. W. Rogers, New York, N. Y.  
283,746 Telegraph Transmitter H. Lynn, New York, N. Y.  
283,026 Telegraph, Exchange Signaling Apparatus for T. D. Lockwood, Malden, Mass.  
283,492 Telephone and Telegraphic Instruments, Apparatus for Protecting F. E. Kinsman, New York, N. Y.  
282,980 Apparatus for Making Glass Insulators Matthew Johnson, Ellenville, N. Y.  
283,200 Composition for Coating and Insulating Underground Wires Henry B. Brumett, Lowell, Mass.  
283,041 Composition to Insulate, Preserve and Protect Wire for Electrical Purposes Doulce B. Turner, Chicago, Ill.  
283,073 Electrical Indicator for Speaking Tubes Joseph Capron, New York, N. Y.  
283,042 Electric Arc Lamp William M. Thomas, Cincinnati, O.  
283,355 Electric Battery Chas. P. Orin, Cambridge, Mass.  
283,452 Electric Circuit Break Instrument Charles A. Scott, Boston, Mass.  
283,167 Electric Commutator or Switch E. Thomson, New Britain, Conn.  
283,186 Electric Lamp F. Bain, Union City, Ind.  
283,291 Electric Locking Mechanism for Switch and Signal Levers Oscar Gannett, Boston, Mass.  
283,270 Incandescent Electric Lamp, Samuel D. Mott, Menlo Park, N. J.  
282,904 Removing Tin from Tin Scrap by Electricity James L. Delaplaine, Joseph G. Hendrickson and Francis J. Clamer, Philadelphia, Pa.  
283,198 Rheostat George W. O'Hara, Kaladiazoo, Mich.  
283,245 Secondary Battery F. T. Starr, Philadelphia, Pa.  
283,002 Speaking Telephone Francis J. Blake, Weston, Mass.  
283,312 Spring-jack and Circuit for Through Telephone Lines Charles H. Wilson, Chicago, Ill.  
282,999 Telephone Charles Egan, Zanesville, O.  
283,354 Telephone Local Call Instrument William Nichols, Boston, Mass.  
283,129 Telephone Transmitter William C. Lockwood, Brooklyn, N. Y.  
283,175 Regulator for Dynamo-electric Machines Robert J. Shesky, New York, N. Y.  
283,168 Electric Lamp E. Thomson, New Britain, Conn.  
283,394 Central Office Apparatus for Telephones Leroy B. Firman, Chicago, Ill.  
283,343 Dynamo-electric Machine Edwin J. Houston, Philadelphia, Pa.

AUGUST 21st.

- |         |                                                                  |                                                   |
|---------|------------------------------------------------------------------|---------------------------------------------------|
| 283,596 | Annunciator, Electric                                            | E. Flint, Jr., Boston, Mass.                      |
| 283,631 | Electric Conductor                                               | H. D. Stanley and C. Desolithe, Bridgeport, Conn. |
| 283,698 | Electric Machine, Dynamo                                         | A. M. Loryn and C. H. Palmer, New York, N. Y.     |
| 283,698 | Electric Machine, Dynamo                                         | E. Weston, Newark, N. J.                          |
| 283,724 | Electric Machine, Armature for Dynamo                            | J. T. Lister, Cleveland, Ohio.                    |
| 283,747 | Electric Motor                                                   | J. Weston, Newark, N. J.                          |
| 283,796 | Electric Signaling Device                                        | W. S. Johnson, Washington, D. C.                  |
| 283,806 | Electromagnetic Motor                                            | J. Weston, Newark, N. J.                          |
| 283,882 | Long Electric                                                    | C. D. Huskins, New York, N. Y.                    |
| 283,971 | Long Electric                                                    | H. S. Maxam, Brooklyn, N. Y.                      |
| 283,974 | Long Electric                                                    | E. Thomson, New Britain, Conn.                    |
| 283,972 | Long Electric                                                    | C. Richter, Chicago, N. J.                        |
| 283,985 | Telegraph, Automatic                                             | J. W. Rogers, New York, N. Y.                     |
| 283,996 | Telegraph Transmitter                                            | H. Lang, New York, N. Y.                          |
| 283,996 | Telephonic Exchanges, Signaling Apparatus for                    | T. D. Lockwood, Malden, Mass.                     |
| 283,992 | Telephonic and Telegraphic Instruments, Apparatus for Protecting | F. E. Kinaman, New York, N. Y.                    |

AUGUST 28TH

- |         |                              |                                 |
|---------|------------------------------|---------------------------------|
| 261,137 | Cables, Testing Lead-covered | W I M Henry, Pittsburg, Pa      |
| 261,138 | Cables, Testing Lead-covered | H Van Hovenberg, Elizabeth, N J |
| 261,139 | Electric Cables              | J H Johns, New York, N Y        |
| 261,140 | Electric Cables              | Look for printing off           |
| 261,141 | Electric Cables              | R B Warner, Pittsburg, Pa       |
| 261,142 | Electric Cables              | Look for printing off           |
| 261,143 | Electric Cables              | Look for printing off           |
| 261,144 | Electric Cables              | Look for printing off           |
| 261,145 | Electric Cables              | Look for printing off           |
| 261,146 | Electric Cables              | Look for printing off           |
| 261,147 | Electric Cables              | Look for printing off           |
| 261,148 | Electric Cables              | Look for printing off           |
| 261,149 | Electric Cables              | Look for printing off           |
| 261,150 | Electric Cables              | Look for printing off           |
| 261,151 | Electric Cables              | Look for printing off           |
| 261,152 | Electric Cables              | Look for printing off           |
| 261,153 | Electric Cables              | Look for printing off           |
| 261,154 | Electric Cables              | Look for printing off           |
| 261,155 | Electric Cables              | Look for printing off           |
| 261,156 | Electric Cables              | Look for printing off           |
| 261,157 | Electric Cables              | Look for printing off           |
| 261,158 | Electric Cables              | Look for printing off           |
| 261,159 | Electric Cables              | Look for printing off           |
| 261,160 | Electric Cables              | Look for printing off           |
| 261,161 | Electric Cables              | Look for printing off           |
| 261,162 | Electric Cables              | Look for printing off           |
| 261,163 | Electric Cables              | Look for printing off           |
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| 261,166 | Electric Cables              | Look for printing off           |
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| 261,168 | Electric Cables              | Look for printing off           |
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| 261,170 | Electric Cables              | Look for printing off           |
| 261,171 | Electric Cables              | Look for printing off           |
| 261,172 | Electric Cables              | Look for printing off           |
| 261,173 | Electric Cables              | Look for printing off           |
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| 261,190 | Electric Cables              | Look for printing off           |
| 261,191 | Electric Cables              | Look for printing off           |
| 261,192 | Electric Cables              | Look for printing off           |
| 261,193 | Electric Cables              | Look for printing off           |
| 261,194 | Electric Cables              | Look for printing off           |
| 261,195 | Electric Cables              | Look for printing off           |
| 261,196 | Electric Cables              | Look for printing off           |
| 261,197 | Electric Cables              | Look for printing off           |
| 261,198 | Electric Cables              | Look for printing off           |
| 261,199 | Electric Cables              | Look for printing off           |
| 261,200 | Electric Cables              | Look for printing off           |



# A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

- 7 Electric Wires, Underground Conduit for. E. Omensetter, Philadelphia, Pa.
- 8 Electrical Conductor. T. B. Delany, New York, N.Y.
- 9 Electrical Distribution, System of. T. A. Edison, Menlo Park, N.J.
- 10 Electrical Distribution, System of. T. A. Edison, Menlo Park, N.J.
- 11 Electrical Distribution, System of. T. A. Edison, Menlo Park, N.J.
- 12 Electrical Distribution, System of. T. A. Edison, Menlo Park, N.J.
- 13 Locomotive, Electric. L. Daft, Greenville, N.J.
- 14 Locomotive, Electric. L. Daft, Greenville, N.J.
- 15 Railway Rail, Electric. L. Daft, Greenville, N.J.
- 16 Telegraph and Telephone Lines, Combined Cut-out and Ground Switch for. C. H. Lothrop, Lyons, Iowa.
- 17 Telegraph, Duplex and Quadruplex. G. W. Gardanier, New York, N.Y.
- 18 Telegraph Fire Alarm. T. Ahearn, Ottawa, Ontario.
- 19 Telephone and Signal Circuit. E. P. Warner, Chicago, Ill.
- 20 Telephone and Telegraph Lines, Signalling Apparatus for. P. Gray and P. L. Pope, Elizabeth, N.J.
- 21 Telephone Call Boxes, Circuit for. C. E. Scribner, Chicago, Ill.
- 22 Telephone Exchange. I. M. O'Donel, Pittsburg, Pa.
- 23 Telephonic Apparatus. W. A. Belcher, Lowell, Mass.

## SEPTEMBER 4TH.

- 24 Car Wheel and Brake, Electro-magnetic. H. M. Beldler, Texarkana, Ark.
- 25 Clock, Primary Electric. D. F. Sweet, Hastings, Mich.
- 26 Clocks, Circuit for Secondary Electric. H. L. Bailey, Brooklyn, N.Y.
- 27 Electric Call and Signal. L. J. White, Waterbury, Conn.
- 28 Electric Conductor, Compound. W. B. Hollingshead, New York, N.Y.
- 29 Electric Light Stations, Switch Board for. R. J. Sheehy, New York, N.Y.
- 30 Electric Lighting. K. W. Hodges, Westminster, England.
- 31 Electric Machine, Dynamo. C. E. Ball, Philadelphia, Pa.
- 32 Electric Machine, Dynamo. W. B. Cleveland, Cleveland, Ohio.
- 33 Electric Machine, Dynamo. W. B. F. Elphinstone and C. W. Vincent, Holloway, England.
- 34 Electric Machine, Dynamo. J. E. H. Gordon, Gordon, England.
- 35 Electric Motor. L. W. Stockwell, Cleveland, Ohio.
- 36 Electric Wire Conduit. L. M. Green and I. P. Birch, Philadelphia, Pa.
- 37 Electrical Conductor, Flexible. H. B. Lytle, Boston, Mass.
- 38 Electro-magnetic Rheotome. F. L. Pope, Elizabeth, N.J.
- 39 Lamp, Electric-arc. R. J. Sheehy, New York, N.Y.
- 40 Lamp, Incandescent Electric. T. E. Gatehouse, Camberwell, England.
- 41 Lamp Lighting Device, Electric. H. Van Hoevenbergh, Elizabeth, N.J.
- 42 Storage Battery. C. T. Tomkins, New York, N.Y.
- 43 Telegraph Blank. N. W. Hartwell, Louisville, Ky.
- 44 Telegraph Keys, Automatic Circuit Closer for. S. J. Spurgeon Liberty, Mo.
- 45 Telegraphs, Multiple Signal Box for Fire and District. J. C. Wilson, Boston, Mass.
- 46 Telegraphic Apparatus. F. L. Pope, Elizabeth, N.Y.
- 47 Telegraphy. G. Smith and T. F. Taylor, Brooklyn, N.Y.
- 48 Telephone and Telegraph Cable. C. Huck, New Orleans, La.
- 49 Telephone and Telegraph Cable. C. Huck, New Orleans, Pa.

## SEPTEMBER 11TH.

- 50 Annunciator, Electrical. D. A. McCormick, Detroit, Mich.
- 51 Burglar Alarm. W. H. Reiff, Philadelphia, Pa.
- 52 Double Circuit Instrument. A. W. Hall, Meriden, Conn.
- 53 Electric Battery. H. A. Burns, Ansonia, Conn.
- 54 Electric Conductor, Underground. I. B. Hyde, New York, N.Y.
- 55 Electric Conductors, Apparatus for Interlocking. A. W. Hall, Meriden, Conn.
- 56 Electric Switch and Signal Apparatus. A. W. Hall, Meriden, Conn.
- 57 Electric Switch or Circuit Controller. A. Bernstein, Boston, Mass.
- 58 Electric Wire. W. Halkyard, Providence, R.I.
- 59 Electric Wires, Safety Device for. A. Bernstein, Boston Mass.
- 60 Electrical Conductor. F. Moore, Philadelphia, Pa.
- 61 Electrical Conductors. Metallic Tip and Coupling for. G. E. Somers, Bridgeport, Conn.
- 62 Electroliers, Suspending and Circuit Controlling, Mechanism for. A. W. Brewtnall, Westminster, England.
- 63 Electric Signals, Apparatus for Interlocking. A. W. Hall, Meriden, Conn.
- 64 Gas by Electricity, Apparatus for Lighting. H. J. Warren and H. F. Puckard, Brockton, Mass.
- 65 Incandescents, Retort for Carbonizing. C. J. Van Depoele, Chicago, Ill.
- 66 Lamps, Carbon for Arc. F. Bain, Minneapolis, Minn.
- 67 Railway Gates or Signals, Electrically Operating. T. A. B. Putnam, New York, N.Y.
- 68 Telegraph Wires, System of Laying. A. J. O'Reilly, St. Louis, Mo.
- 69 Telegraph Wires, Underground Tube for. W. Lenderoth, New York, N.Y.
- 70 Telephone Switch. C. E. Scribner, Chicago, Ill.
- 71 Telephone Switch. C. E. Scribner, Chicago, Ill.
- 72 Telephonic and Telegraphic System. J. B. Barrett, Chicago, Ill.
- 73 Telephonic System. J. P. Barrett, Chicago, Ill.

## SEPTEMBER 18TH.

- 74 Burglar Alarm, Electric. A. Wiswall, Cincinnati, Ohio.
- 75 Electric Cable Support or Hanger. A. J. Weaver, Providence, R.I.
- 76 Electric Machine, Dynamo. A. Bernstein, Boston, Mass.
- 77 Electric Machine, Dynamo. F. K. Fitch, New York, N.Y.
- 78 Electric Machine, Dynamo. I. Gray, Medford, Mass.
- 79 Electric Time Signaling Device. H. G. Van Wagenen, Monroe, Wis.
- 80 Galvanic Battery. F. H. Peckham, Jr., Providence, R.I.
- 81 Insulation of Electrical Conductors. W. J. How, Philadelphia, Pa.
- 82 Photographer's Retouching Point. J. T. Burke, Nebraska City, Neb.
- 83 Telegraph, Fire Alarm. E. Rogers, Brookline, Mass.
- 84 Telephone Exchange System. J. E. Fenn, Elizabeth, N.J.
- 85 Telephone Exchange System, Signaling Apparatus for. J. H. Cary, Boston, Mass.
- 86 Telephone, Mechanical. W. J. Bowen, Norwalk, Ohio.
- 87 Telephone, Mechanical. H. E. Huston, Monticello, Ill.
- 88 Telephone Transmitter. E. Berliner, Boston, Mass.

# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERT

SEPTEMBER 25TH.

- 285,528 Electric Apparatus Regulator. C J Van Depoele, Chicago, Ill.
- 285,529 Electric Lighting System. M J. Farmer, Newport, R I.
- 285,548 Electric Machine, Dynamo. C E Ball, Philadelphia, Pa.
- 285,549 Electric Machine, Dynamo. C E Ball, Philadelphia, Pa.
- 285,591 Electric Machine, Dynamo. L J Shesby, New York, N Y.
- 285,457 Electric Machines, Armature for Dynamo. C F Brush, Cleveland, Ohio.
- 285,527 Electric Machines, Device for Adjusting the Brushes of Dynamo. C J. Van Depoele, Chicago, Ill.
- 285,547 Electric Motors, Armature for. C E Ball, Philadelphia, Pa.
- 285,582 Gas Lighting Burner, Electric. D Rousseau, New York, N Y.
- 285,572 Insulating Electric Conductors, Machine for. H O Phillips, Waterbury, Conn.
- 285,553 Insulating Electric Conductors. H O Phillips, Waterbury, Conn.
- 285,451 Lamp, Electric. E Weston, Newark, N J.
- 285,445 Lamp, Electric-arc. J R Tibbitts, Housic, N Y.
- 285,716 Lamp, Electric-arc. E Weston, Newark, N J.
- 285,434 Railway Rails, Electrical Connection for. W W. Le Grande, Louisville, Ky.
- 285,714 Secondary Batteries, Apparatus for Charging and Discharging. E Weston, Newark, N J.
- 285,521 Secondary Battery. C J Van Depoele, Chicago, Ill.
- 285,709 Telegraph Printing. H Van Hevenbergh, Elizabeth, N J.
- 285,710 Telegraph Printing. H Van Hevenbergh, Elizabeth, N J.
- 285,670 Telephone Exchanges, Duplicate Switchboard for. G M. Phelps, Jr., Brooklyn, N.Y.
- 285,512 Tele-thermometer. C L. Clarke, New York, N.Y.
- 285,576 Thermostat, Electrical. F H Prentiss and J A. Tilden, Boston, Mass.

OCTOBER 2ND.

- 285,100 Electric Alarms, Portable Circuit Closer for. A Wiswall, Cincinnati, Ohio.
- 285,850 Electric Circuit Changer, Automatic. C J Van Depoele, Chicago, Ill.
- 285,158 Electric Cut-off. J A. Tupper, Salt Lake City, Utah.
- 285,867 Electric Motor. C J Van Depoele, Chicago, Ill.
- 285,778 Electric Switch. W Adams, St. Louis, Mo.
- 285,086 Electrical Conductor for C. Tanks. H W Spang, Reading, Pa.
- 285,853 Electrical or Galvanic Currents to Beds, Couches, etc. R Stilwell, New York, N.Y.
- 285,030 Insulated Electric Conductor. I J Mayall, Reading, Mass.
- 285,035 Insulation of Wires for Telegraph Lines. I J Mayall, Reading, Mass.
- 285,091 Lamp, Electric. C J Van Depoele, Chicago, Ill.
- 285,144 Lamp, Electric-arc. R H Moffatt, Brooklyn, N Y.
- 285,004 Lamp, Electric-arc. C J Van Depoele, Chicago, Ill.
- 285,784 Lamps, Incandescent for Incandescent Electric. G P Bartlett, Woburn, Mass.
- 285,760 Magneto-electric Generator. M S. Conly, Indianapolis, Ind.
- 285,852 Mattress, Electric Galvanic. R Stilwell, New York, N.Y.
- 285,854 Mattress, Spread Electric. R Stilwell, New York, N.Y.
- 285,858 Railway, Electric. C J Van Depoele, Chicago, Ill.
- 285,044 Railway Signal, Automatic Electric. D H Applegate, Red Bank, N.J.
- 285,807 Secondary Battery, Planté's. S. L. Fox, London, England.
- 285,107 Telegraphic Repeater. W. E. Athearn, Philadelphia, Pa.

OCTOBER 9TH.

- 285,181 Clock, Secondary Electric. A S. Crane, Newark, N.J.
- 285,907 Electric Conductor Post. J A Devlin, Philadelphia, Pa.
- 285,289 Electric Generators, Making Elements for Thermal. H Frasch, Cleveland, Ohio.
- 285,414 Electric Machine, Dynamo. G W Finner, Norwich, Conn.
- 285,416 Electric Machine, Dynamo. G W Finner, Norwich, Conn.
- 285,244 Electric Machine, Dynamo. S F Van Choate, New York, N Y.
- 285,252 Electric Machine, Dynamo. S F Van Choate, New York, N Y.
- 285,415 Electric Machines, Armature for Dynamo. G W Finner, Norwich, Conn.
- 285,246 Electric Machines, Armature for Dynamo. T Wolcott, New York, N.Y.
- 285,425 Electric Machines, Compound Shunt Dynamo. R H Mather, Windsor, Conn.
- 285,435 Electric Motor. W S Johnson, Whitewater, Wis.
- 285,456 Electric Wire Lamps, Support for. J V Hiney, Cincinnati, Ohio.
- 285,281 Electrical Synchronous Mechanism. P B Deany, New York, N Y.
- 285,271 Electrical Synchronous Movement. P B Deany, New York, N Y.
- 285,274 Electrical Synchronous Movement. P B Deany, New York, N Y.
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- 285,400 Electrical Synchronous Movement. P B Deany, New York, N Y.

OCTOBER 16TH

- 285,970 Annunciator and Alarm System, Combined. E A Sperry, Cortland, N.Y.
- 285,422 Electric Circuit Closer, Thermometric. M Martin, Malden, Mass.
- 285,945 Electric Conductor and. J F Martin, Chicago, Ill.
- 285,788 Electric Conductor Mark. J F Martin, New York, N Y.
- 285,881 Electric Conductor, Apparatus for Connecting. M Levy, Paris, France.
- 285,624 Electric Machine, Dynamo. P J Houston, Philadelphia, Pa.
- 285,884 Electric Regulator for Controlling the Current in Electrical Systems. M. Levy, Paris, France.
- 285,885 Electric Wire, Insulated. J F Martin, Chicago, Ill.
- 285,886 Electric Wire, Insulated. J F Martin, Chicago, Ill.
- 285,887 Electric Wire, Insulated. J F Martin, Chicago, Ill.
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- 285,970 Electric Wire, Insulated. J F Martin, Chicago, Ill.

# BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

Electro-magnetic Alarm. A. Wiswall, Cincinnati, Ohio.  
 Electro-magnetic Motor. S. F. Van Choate, New York, N.Y.  
 Electrottype Plate. S. S. Hoe, Tarrytown, N.Y.  
 Galvanic Battery. A. Haid, Rahway, N.J.  
 Insulator, Acoustic and Electric. W. J. Bowen, Norwalk, Ohio.  
 Insulator, Electric Wire. J. F. Martin, Chicago, Ill.  
 Insulator, Electrical Wire. J. F. Martin, Chicago, Ill.  
 Insulator for Underground Electric Conductors. J. F. Martin, Chicago, Ill.  
 Insulator for Underground Electric Conductors. J. F. Martin, Chicago, Ill.  
 Insulator for Electric Wires, Coupling for Tubular. J. F. Martin, Chicago, Ill.  
 Insulators for Electric Wires in Underground Conduits. J. F. Martin, Chicago, Ill.  
 Lamp, Electric-arc. D. J. Hauss, T. E. McNamara, J. S. Zerbe, Cincinnati, Ohio.  
 Lamp, Incandescent Electric. D. G. Fitz-Gerald, Brixton, County of Surrey, England.  
 Lamp, Voltaic-arc. O. A. Moses, New York, N.Y.  
 Non-conducting Compound. J. M. Hammill, Philadelphia, Pa.  
 Relay or Electro-magnet, Double Current. A. C. Frazer, Brooklyn, N.Y.  
 Steam Engine and Electric Generator, Combined. L. G. Woolley, Dayton, Ohio.  
 Telegraph Cable. W. T. Henley, Plaistow, County of Essex, England.  
 Telegraph, Duplex. B. Thompson, Buffalo, N.Y.  
 Telegraph, Printing. H. Van Hovenbergh, Elizabeth, N.J.  
 Telegraph, Printing. A. Wirsching, Brooklyn, N.Y.  
 Telegraph Relay. M. J. O'Sullivan, Baltimore, Md.  
 Telegraph Wires, Laying Underground. F. M. Speed, Walla Walla, Washington Territory.  
 Telephone. G. R. Shepherd, Hartford, Conn.  
 Telephone, Acoustic. B. N. Botts, Paso Robles, Cal.  
 Telephone Exchange System. G. F. Durant, St. Louis, Mo.  
 Telephone Receiver. H. E. Waite, New York, N.Y.  
 Telephone Receiver. H. E. Waite, New York, N.Y.  
 Telephone Transmitter. C. D. Haskins, New York, N.Y.  
 Telephones, Apparatus for Counterbalancing Disturbances in. A. Bernstein, Boston, Mass.

## OCTOBER 23RD.

Cane, Electric. A. & A. Roovers, New York, N.Y.  
 Carbon Filaments, Apparatus for Treating. C. G. Perkins, New York, N.Y.  
 Electric Conductor, F. Jacob, Woolwich, County of Kent, England.  
 Electric Currents, System of Generating and Distributing. C. J. Van Depoele, Chicago, Ill.  
 Electric Cut-out, Automatic. C. G. Perkins, New York, N.Y.  
 Electric Lighting System. J. A. McCoy, Fall River, Mass.  
 Electric Machine Regulator, Dynamo. C. J. Van Depoele, Chicago, Ill.  
 Electric Machines, Safety Switch for Dynamo. C. J. Van Depoele, Chicago, Ill.  
 Electric Switch and Cut-out. C. G. Perkins, New York, N.Y.  
 Electric Switchboard and Signaling Apparatus. T. W. Lane, Boston, Mass.  
 Electric Wires, Gutter, Curbstone, and Sidewalk Conduit for. E. Clark, Cornwall, N.Y.  
 Electric Transmitter. S. D. Field, New York, N.Y.  
 Incandescents, Apparatus for Carbonizing. C. G. Perkins, New York, N.Y.  
 Incandescents, Apparatus for Carbonizing. C. G. Perkins, New York, N.Y.  
 Incandescents, Apparatus for Treating. C. G. Perkins, New York, N.Y.  
 Insulating Covering for Telegraph Wires, Metallic. E. Clark, Cornwall, N.Y.  
 Insulating Material. C. J. Van Depoele, Chicago, Ill.  
 Insulator, Electric Wire. J. F. Martin, Chicago, Ill.  
 Lamp, Electric-arc. J. B. Tibbits, Hoosic, N.Y.  
 Lamp, Electric Incandescent. C. G. Perkins, New York, N.Y.  
 Lamps, Carbon Holder for Incandescent. C. G. Perkins, New York, N.Y.  
 Lamps, Clockwork for Mechanical. T. Silver, New York, N.Y.  
 Lamps, Electrode for Electric-arc. C. J. Van Depoele, Chicago, Ill.  
 Phonograph. C. C. Reynolds, Prescott, Arizona.  
 Telegraph and Transmitter therefor, Printing. S. D. Field, New York, N.Y.  
 Telegraph, Printing. S. D. Field, New York, N.Y.  
 Telephone Lines, Mechanism for Preventing Induced Currents in. J. W. Brennan & N. Rousseau, Chicago, Ill.  
 Telephone Repeater. D. Drawbaugh, Eberly's Mill, Pa.  
 Telephone Support. T. W. Lane, Boston, Mass.  
 Telephonic System. C. L. Anders, Boston, Mass.

## OCTOBER 30TH.

Burglar Alarm, Detonating. W. H. Reiff, Philadelphia, Pa.  
 Electric Alarms, Circuit Closer for. L. A. Brigel, Cincinnati, Ohio.  
 Electric Battery. A. F. DeLafield, New York, N.Y.  
 Electric Circuits, Safety Catch for. C. Goddard, New York, N.Y.  
 Electric Distribution, System of. T. A. Edison, Menlo Park, N.J.  
 Electric Generator, Dynamo or Magnetic. F. Bain, Chicago, Ill.  
 Electric Lighting Systems, Indicator for. W. P. Freeman, Brooklyn, N.Y.  
 Electric Machine, Dynamo. F. Bain, Chicago, Ill.  
 Electric Machine, Dynamo. F. Bain, Chicago, Ill.  
 Electric Machine, Dynamo. T. A. Edison, Menlo Park, N.J.  
 Electric Machine, Dynamo. T. A. Edison, Menlo Park, N.J.  
 Electric Machine, Dynamo. T. A. Edison, Menlo Park, N.J.  
 Electric Machine, Dynamo or Magneto. F. Bain, Chicago, Ill.  
 Electric Machine, Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.  
 Electric Machine, Dynamo or Magneto. T. A. Edison, Menlo Park, N.J.  
 Electric Machine, Dynamo or Magneto. J. E. Giles, Hazleton, Pa.  
 Electric Machine, Dynamo or Magneto. P. P. Nungesser, Cleveland, Ohio.  
 Electric Machine, Regulator, Dynamo. T. A. Edison, Menlo Park, N.J.  
 Electric Machine Regulator, Dynamo. G. I. Murdock, Binghamton, N.Y.  
 Electric Machine, Wiper for the Commutators of Dynamo. Alpena, Mich.  
 Electric Regulator. T. A. Edison, Menlo Park, N.J.  
 Electric Conductors, Junction for. C. Goddard, New York, N.Y.  
 Electrical Distribution, Regulator for Systems of. T. A. Edison and C. L. Clarke, Menlo Park, N.J.  
 Electrical Distribution, System of. T. A. Edison, Menlo Park, N.J.  
 Electrical Distribution, System of. T. A. Edison, Menlo Park, N.J.  
 Electrical Testing. C. J. Bradley, New York, N.Y.  
 Fire Alarm Apparatus, Electric. W. C. Gordon, England.  
 Flat Iron, Electric, R. N. Dyer, and. N. W. Seely, Menlo Park, N.J.  
 Insulated Electric Conductor. G. W. McGill, New York, N.Y.  
 Insulated Electric Conductor. H. O. Phillips, Waterbury, Conn.



# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVE

- 287,519 Lamp, Incandescing Electric T A Edison, Menlo Park, N J
- 287,520 Lamps, Incandescing Conductor for Electric T A Edison, Menlo Park, N J.
- 287,518 Lamps, Method of Starting Incandescing Electric T A Edison, Menlo Park, N J.
- 287,773 Magnet to Electric Machine P P Nungesser, Cleveland, Ohio
- 287,448 Railway Signal Electric W W Leetwade, Louisville, Ky
- 287,466 Railway Signals Electrical Connection for T J Pottenger, Louisville, Ky.
- 287,747 Telephone Receiver H F White, New York, N Y
- 287,748 Telephone Receiver H F White, and S H Bartlett, New York, N Y
- 287,719 Telephone Time-Signal Repeating System J M Orum, Dallas, Texas.
- 287,499 Telephone Transmitter E L Wilson Boston Mass
- 287,414 Telegraphic Repeater and Relay J A Mauney, Washington, D C.
- 287,401 Time Detector, Electric T Ahearn, Ottawa, Ontario
- 287,775 Time Lock, Electric W. E. Peirce, Newark, N J.

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- 287,850 Burglar Alarm, Detonating W Noblett, Chicago, Ill
- 288,175 Clock Systems, Circuit and Apparatus for Electric Jas Hamblett, Brooklyn, N.Y.
- 287,811 Dynamometer I M Tiskoy, Boston, Mass
- 287,893 Dynamo-meter, Electro Magnetic C F Brackett, Princeton, N.J.
- 10,401 Electric Cables, Machine for Making J Farrell Re-issue
- 10,402 Electric Cables, Machine for Making J Farrell Re-issue
- 288,089 Electric Circuits, Station Call for T W Mather New Haven, Conn
- 287,981 Electric Lights, Tower for C D F Smith, Aurora, Ill
- 288,012 Electric Machine, Dynamo W B F Elphenston, and W Vincent, England.
- 288,081 Electric Machine, Apparatus for Dynamo J E Gibbs, Hazleton, Pa
- 287,812 Galvanic Battery Cell I F Felton, Pittsburg, N Y
- 287,855 Gas Engines Electric Igniting Device for L C Parker, Yonkers, N Y
- 288,002 Insulating, Carrying and Laying Electric Wire P W Brown, Rochester, N Y
- 10,403 Insulating Compound for Electrical Conductors, and Apparatus for Compounding the same J. B. Hyde
- 10,404 Insulating Material to Electric Wires, Apparatus for applying J D Hyde Re-issue
- 287,880 Insulator (Loggia) C C Hinsdale Cleveland, Ohio
- 287,805 Lighting Arrestor C J Schmitt, Raymond, N H
- 287,927 Lighted-red Compound W Hewitt, London, Ontario
- 287,887 Paper and Electrical Apparatus for Carrying J W Osborne, Washington, D.C
- 288,111 Telegraph, District Police, or Fire F Pease, New York, N Y
- 287,914 Telegraphic Transmitter M H Dement, Chicago, Ill
- 287,868 Telephone and Boxes, Automatic Circuit Switch for C E Scribner, Chicago, Ill.
- 287,888 Telephone Receiver S H Bartlett & H F White, New York, N Y
- 288,881 Telephone Support C H Olby, Sarnowsky, Ohio
- 288,017 Telephone Transmitter H Clay, Philadelphia, Pa
- 288,157 Voltage-me Light W Baxter, junr, Jersey City, N.J.

## NOVEMBER 13TH.

- 288,570 Annunciator and Fire Alarm, Electric Hotel A T Hess, Des Moines, Iowa.
- 288,302 Bell, Polarized Electric W J Bowen, Norwalk, Ohio.
- 288,186 Clock, Electric L P Schlegel, Soloth, Switzerland
- 288,115 Electric Circuits Apparatus for Regulating S Z De Ferranti & A Thompson, England
- 288,601 Electric Light Circuits, Current Regulator for C R Arnold, Philadelphia, Pa.
- 288,316 Electric Machine, Dynamo S Z De Ferranti & A Thompson, England
- 288,118 Electric Machine, Regulator Dynamo or Magnet T A Edison, Menlo Park, N.J.
- 288,586 Electric Sign Box J C Wilson & M G Davis Boston, Mass
- 288,588 Electric Wire Conduit B A Dryer, New York, N Y
- 288,111 Electric Wires, Subterranean Laid H B Cobb Wilmington, Del.
- 288,111 Electric Wires, System of Laying subterranean Laid of H B Cobb, Wilmington, Del
- 288,116 Electric Wire Conduit, Compound I Johnson, Vincennes, Ind
- 288,586 Electric Signal J Deane Boston, Mass
- 288,414 Insulating Electric Conductors Machine for J Kruesi, Brooklyn, N Y.
- 288,400 Insulator Telegraph S Deane, Melrose, Mass.
- 288,416 Lamp, Electric E B Knowlton Brooklyn, N.Y.
- 288,111 Lamps, Contact for Electric H Edmonds, Jr New York, N Y
- 288,218 Lamps, Contact for Electric H Edmonds, Jr, New York, N Y
- 288,513 Railway and Locomotive Electric W M Thomas, Cincinnati, Ohio.
- 288,235 Telephone A F DeBour, College Hill, Mass
- 288,627 Telephone Holder and Automatic Circuit Breaker, Adjustable W. N. Eckert, J A. Sealey, and New York, N Y
- 288,419 Telephone Apparatus J H Kusman, Rye, N Y
- 288,801 Telephone Communication, Apparatus for J H Rogers, Washington, D.C.

## NOVEMBER 20TH.

- 288,623 Clocks, Actuating Device for Secondary Electric A S Crane, Newark, N J
- 288,738 Electric Conductors, Underground Conduit for J E Gies, Hazleton, Pa
- 288,888 Electric Telegraphic Railway Frame Apparatus for W Stroudeley, and E J Houghton, England.
- 288,888 Electric Machine, Dynamo A J Kimball Worcester, Mass
- 288,888 Electric Machine, Dynamo T J McLaughlin Pittsburgh, Pa
- 288,888 Electric Machine, Regulator Dynamo T S Reeman, W Taylor, and F King, England
- 288,888 Electric Machine, Regulator for Dynamo T J McTighe, and J T McConnell, Pottsville, Pa.
- 288,888 Electric Wires, Underground, Laying and Insulation of C C Gilman, Colorado, Iowa
- 288,888 Electric Wires, S. Bergman, New York, N Y.
- 288,888 Lamp, Electric T J McConnell Pittsburg, Pa.
- 288,888 Lamp, Electric T J McConnell and J T McConnell, Pittsburg, Pa.
- 288,888 Lamp, Electric T J McConnell and J T McConnell, Pittsburg, Pa.
- 288,888 Magnet, Electric Machine J S Reeman Hazleton
- 288,888 Telegraphic Apparatus for Making A H Munon, Paris, France
- 288,888 Telegraphic Apparatus Multiple C D Fitch New York, N Y
- 288,888 Telegraphic Key H Anderson, New York, N Y
- 288,888 Telegraph, Simple W C Smith, Philadelphia, Pa
- 288,888 Telegraph, Simple C I Wright and A Fisher Petersburg, Ill.
- 288,888 Telegraph, Simple A I Mather, New York, N Y
- 288,888 Telegraph, Simple A I Mather, New York, N Y
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- 288,888 Telegraph, Simple A I Mather, New York, N Y
- 288,888 Telegraph, Simple A I Mather, New York, N Y
- 288,888 Telephone System W N Eckert and J A Sealey, New York, N Y
- 288,888 Telephones, Automatic Resistance Cut-out for D D. Wright and C. A. Fisher, Petersburg, Ill



# INDEX OF THE PATENT LAWS OF THE MORE IMPORTANT FOREIGN COUNTRIES,

Information to Inventors Desirous of Obtaining Foreign Patents.

**EUROPEAN PATENTS.**—The large remuneration received by so many American inventors through European patents, and the favour with which American inventions are regarded by European manufacturers, should encourage every one of our countrymen, who has succeeded in obtaining the privilege of a patent at home, to do everything in his power to obtain protection for his invention in at least one of the most important of the European countries. Patents in Great Britain, France and Germany, if properly applied for and obtained, will secure to him the exclusive right to manufacture, sell and use his invention in territory containing a population of about one hundred and twenty-five millions; but in order to insure their absolute validity it is desirable that these should be applied for before the issue of a United States patent. There are, however, important countries where some delay is not prejudicial, but it is always desirable to take steps to secure all European patents at the earliest convenient time. The patent systems of the several European countries differ in many essential respects, not only from that of the United States, but from each other, a very wide experience, such as is seldom obtained, is necessary to the successful preparation and prosecution of applications in those countries. It is therefore very desirable for American inventors intending to apply for European patents to first secure the services and aid of such patent solicitors or attorneys in this country as are thoroughly qualified. There are many cases in which, in European countries, as much matter relating to one subject can be embraced in one patent as would require two or more distinct patents in the United States, and broader protection can be obtained; but it is important in order to do this that the specification should be properly prepared and the matter properly presented. In such cases, as models are not required, it often happens that an experienced attorney may be able to secure patents in Great Britain, France and other countries, at a cost for each country less than would, with cost of models, be involved in patenting the same amount of matter in the United States.

**SYNOPSIS OF THE PATENT LAWS OF THE MORE IMPORTANT FOREIGN COUNTRIES, AND STATEMENT OF THE EXPENSES OF OBTAINING PATENTS THEREIN.**—The order in which the several countries are here arranged is that of the generally estimated importance of their several patents. The expenses stated are given in United States currency, and embrace Government fees and the whole of the agency fees.

**GREAT BRITAIN.**—The British patent covers the United Kingdom of Great Britain and Ireland, the Channel Islands and the Isle of Man, containing a population of about forty millions, but does not extend to the colonies; each British colony making and administering its own patent laws. The patent is always granted for fourteen years, and may be obtained by the inventor or his assignee, and in some cases by the first introducer. The British law neither compels the patentee to work or manufacture the subject of the patent within any specified time, nor forbids the importation of patented articles. The total cost of obtaining a British patent is \$26, which is required in advance; the balance, \$52, being payable in three and one-half months. At the expiration of three and seven years, respectively, there are taxes to be paid, or the patent will become void. These taxes would be paid by the purchaser if the patent should be sold. For summary of the New Law which comes into force Jan. 1, 1884, see *Patents*.

**FRANCE.**—French patents are granted to inventors or their representatives, the term being always fifteen years. All the French colonies are also covered by the patent. The total population of France and its colonies is about forty-five millions. The patent must be worked in France within two years, and its working must not cease for a period of two years. The patentee must not import for sale or commercial use any articles covered by his patent, but may, by obtaining a permit, import a sample or model. The usual expense of a French patent is \$100, payable in advance. There is also a small tax payable at the end of every year to keep the patent valid.

**THE GERMAN EMPIRE.**—The new law of 1877, providing for the protection of inventors throughout the whole of the Empire of Germany by a single patent, is of the very greatest importance to American inventors. This patent, which is granted for the term of fifteen years, covers kingdoms and states in

which, until recently, no less than twenty-three separate patents were necessary for complete and in many of which, as in Prussia, Bavaria, Saxony, Württemberg, and Alsace-Lorraine, some of the most important industries in Europe. These kingdoms and states contain a population of about forty-three millions, which is greater than that of any European state except Russia. A valid German patent may be obtained by the inventor or his representative, or, in some circumstances by the introducer. The total cost of obtaining it is \$80 payable in advance, is an annual tax, the amount of which is progressive, but is trifling for the earlier years. The delay is allowed for putting the invention in operation.

**BELGIUM.**—This is one of the most actively manufacturing nations in the world. Its industry of every kind, and large exportations are made to other countries. Though territorially containing a population of only about five millions, it is one of the most important countries in securing a patent. Patents are granted generally for fifteen years to inventors or their representatives at a total expense of \$80, payable in advance. A yearly tax, very small at first, but increasing every year, is also payable to keep the patent in force. The patented invention must be worked one year after its having been commercially worked in any other country, but this time can be extended on application.

**AUSTRIA AND HUNGARY.**—Patents for the Austrian empire, which also include the kingdoms of Hungary, with a total population of nearly forty millions, are granted for any term demanded, from one to fifteen years. If granted for less than the longest term, the patent may be easily extended as desired till it has run the full time. The law requires the invention to be worked in the empire one year. The importation of patented articles is allowed.

The government charges are in proportion to the length of the term. The cost for one year is \$115, but it is better to take it for two years at a cost of \$115, which is payable in advance.

**RUSSIA.**—Patents of invention are granted in Russia to any applicant for three, five or ten years. The invention should be worked in the empire within the first quarter of the term of the grant. It is not necessary that the applicant should be the inventor, a patent obtained by any other person could be invalidated if the inventor should afterwards set up a claim. No restriction is placed upon importation by the patentee. The whole expense of a Russian patent for three years is \$350, for five years, \$350, and for ten years, \$600, in advance.

**SPAIN, CUBA, &c.**—Under the new law which came into operation on August 1st, 1878, a patent includes all the colonies of Spain, including Cuba, Porto Rico, and the Philippine Islands. Patents are granted in most cases for twenty years, and can be obtained at a cost not generally exceeding \$100, including government and agency fees, which is less than a portion of the same for similar patents charged by American patent attorneys for a ten years patent for Cuba alone. The patent must be worked within two years. An annual tax, very small at first, but progressively increasing, is required to keep the patent in force. This Spanish law is one of the best in Europe, the penalties for infringing a patent are very severe, including the confiscation to the patentee of all infringing articles and cases, fines and imprisonment. A great industrial revival has lately taken place in Spain, and we recommend all inventors who have valuable inventions to secure them in this country.

**ITALY.**—Patents in Italy may be obtained for any number of years, from one to fifteen, at the option of the applicant, and can be extended from shorter terms to the full term. Those patents granted for terms not exceeding five years must be worked within the first year. Those granted for longer terms are allowed two years' delay for working. The importation of patented articles by the patentee is permitted. The Italian patent covers the states recently annexed. The cost of the patent depends upon the length of the term. The government taxes are of two kinds, namely, one proportional to the length of the term and payable in advance, the other payable in the form of an annuity. To secure the patent by the smallest advance payment, the patent is commonly first taken for six years. The total cost of obtaining the patent for this term is \$150, payable in advance. This sum embraces the whole cost for that term, and one year's annuity.

**PORTUGAL.**—Patents of invention are granted for five, ten, or fifteen years, as may be desired by the inventors only, or their legal representatives, the total expense for Government and agency fees for five years \$176, for ten years \$225, for fifteen years \$275. The invention must be worked within the first half of the term for which the patent is granted.

**SWEDEN.**—The patent is granted only to the inventor or his legal representatives. The term of the grant is fixed by the Government according to the supposed importance of the invention, but never exceeding fifteen years. The invention must generally be worked within two years. The cost is \$125.

**NEWAY.**—The inventor, his attorney, or assignee, and in some cases an importer, can obtain a patent term not exceeding ten years. Two years' delay is generally allowed for working the patent. Total cost \$120.

**REMARK.**—Patents are granted to inventors or their legal representatives for from five to twenty years as determined by government in each case. Patents to mere *introducers* are granted for five years. Must be worked within one year. Total cost \$125.

**BRITISH COLONIES.—CANADA.**—In this colony patents are granted to inventors, or their legal representatives only, and can be obtained for five, ten, or fifteen years as demanded. The government fees are \$20 gold for each five years. To save first cost it is customary to apply for the patent at first for five years only. The total amount of government and agency fees for this term is usually \$50. The cost of extension is trifling in addition to the additional government fee. The patent must be applied for within one year after the date of the United States, or any previously granted patent, and must be worked in Canada within two years.

**BRITISH INDIA.**—Patents are granted only to inventors and their legal representatives for fourteen years. The application should be made before the invention is in public use either in India or in Great Britain. The cost is \$300.

**AUSTRALIA.**—Six different colonies having separate governments are embraced in what is commonly known as Australia, and a separate patent is required for each. The patents are granted for fourteen years to inventors or their legal representatives, and in some cases to introducers. The costs for government and agency fees for the grants of the patents in the several colonies are as follows :—

|                    |    |    |    |    |    |    |    |    |    |    |       |
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| New South Wales    | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | \$250 |
| Victoria ..        | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 200   |
| South Australia .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 250   |
| West Australia ..  | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 350   |
| Queensland ..      | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 250   |
| Tasmania ..        | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 200   |

**NEW ZEALAND.**—What are called patents in this colony are only granted to inventors who have not previously taken patents anywhere else. Letters of Registration are granted to *bonâ fide* holders of patents in New Zealand, whether inventors or assignees. These letters have the same force as patents. Total cost \$250.

**CAPE OF GOOD HOPE.**—The patent is granted to the inventor or his legal representative for fourteen years. Total cost \$200.

**“Rules of Practice and Patent Laws,”** of the United States, furnished free on written application to the Commissioner of Patents, Washington, D.C.

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Peck Bros. & Co. brass cocks, valves and fittings, 72 Franklin st. New Haven, Conn.  
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**R.**

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 ord Geo. D. architect, 149 Broadway, New York.  
 eck Electrotype Co. 68 Beekman st. New York.  
 ay H. A. & Co. steam engine makers, Williams cor. Hughes st. Baltimore, Md.  
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 as Wm. B. electroliers, etc. 61 Ann st. New York.  
 on & Cary, railroad supplies, St. Paul, Minn.  
 on, Rea & Co. steam engine makers, 134 Water st. Pittsburgh, Pa.  
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**Zucker & Levett Chemical Co.** dynamo and magneto electric machine manufacturers, 540 W 14th  
New York.

**Zuckschwerdt & Co.** burglar and fire alarm manufacturers, 106 St. Mark's pl. New York.

# AMERICAN CLASSIFIED TRADES.

## accumulators of Electricity.

*F.—Accumulateurs d'Electricité.*

*G.—Electrische Accumulatoren.*

Electric Storage Co. 792 Broad st.  
N.J.

SWAN ELECTRIC LIGHT CO.  
Broadway, cor. 14th st. New York, *see*  
*advertisers.*

ELECTRIC CO. (Parent Co.) 379  
W. Cleveland, O. *see index to advertisers.*

E. Washington, D.C.

Proal, rooms 29 & 31, Chamber com-  
bldgs. Baltimore, Md.

Storage & Light Co. 95 Milk st. Boston,

Accumulator Co. (Parrish & Pendle-  
& 80 Broadway, New York.

N JAMES F. Inventors' institute,  
Union, New York.

Electric Storage & Light Co. 234 Broad-  
way New York.

N. S. 237 Broadway, New York.

Force Co. 234 Broadway, New York.

Electric Lighting Co. 234 Broadway,  
New York.

## Acid Manufacturers.

*F.—Acides (Fab. de).*

*G.—Säure-Fabrikanten.*

P. & Co. 75 & 77 River st. Pawtucket  
at Greenwich, R.I.

ELD CHEMICAL WORKS, 159 Front  
New York, New Haven & Bridgeport, Conn.

Allen, 182 Water st. New York.

Chemical Works (James Riley & Sons),  
Providence, R.I.

Acid Manufacturing Co. 70 Weybossett,  
Providence, R.I.

Rich, Martin & Sons, 55 Fulton st.  
New York.

James L. & Co. 47 Fulton st. New York.

Acid Co. 159 Front st. New York & New  
Haven, Conn.

Weightman, 56 Maiden la. New York

8 N 9th st. Philadelphia, Pa.

Jones, Bennington, Vt.

## Acid Manufacturers—continued.

Standard Chemical Works (Houghton and  
Wiemarth) Stamford, Vt.

Swift W. H. 117 Milk st. Boston, Mass.

Talbot C. P. City Market House, Lowell, Mass.

Taylor & Barker, 3 Boston and Maine Depot,  
Lowell, Mass.

Wells, Orson & Son, North Adams, Mass.

## Acoustic, or Private Line Telephones.

*F.—*

*G.—*

ELGIN TELEPHONE CO., ELGIN, (Kane  
Co.) ILLS. William Hubbard, Patentee; Elgin  
Telephone for private use.

HARBERT EDW. E. & CO. 159 La Salle st.  
Chicago, Ills.

HOLCOMBE J. R. & CO. Atwater bldgs.  
Cleveland, O.

## Agencies for the Sale of Patents.

*F.—Brevets et Marques de fabrique (Agents de).*

*G.—Agenten zum Registriren der Patente, &c.*

Calmore & Co. 501 Chestnut st. Philadelphia, Pa.

Chamberlin & Co. 735 Broadway, New York,  
Philadelphia and Chicago, Ills.

Globe Patent Agency, 34 Park Row, New York.

Hazelton & Gilman, room c, 178 Devonshire st.  
Boston, Mass.

Inventors' Institute, 28 Cooper Union, New  
York.

Knudson Electric Co. 39 Nassau st. New York.

Manhattan Agency, 733 Broadway, New York.

Patterson, Jno. M. 91 Grant st. Pittsburgh, Pa.

## Architects.

*F.—Architectes.*

*G.—*

Barrett James, 4 New Chambers st. New York.

Beir Theo. J. 215 Bowery New York.

Berger Richard 110 Leonard st. New York.

Bishop Wm. E. 4 W 9th st. New York.

Bobbs, Cook & Willard, 55 Broadway, New York.

Breeze James L. 121 E 23rd st. New York.

## Architects—continued.

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 Cady J. C. & Co. 111 Broadway, New York.  
 Camp Fredk. T. 1242 3rd av. New York.  
 Chappell Geo. P. 111 Broadway, New York.  
 Clevedon & Putzel, 2233 3rd av. New York.  
 Clinton Chas. W. 18 Broadway, New York.  
 Colos Frederick H. 66½ Pine st. New York.  
 Congdon Henry M. 711 Broadway, New York.  
 Cook Walter 57 Broadway, New York.  
 Cordes A. W. 225 E 27th st. New York.  
 Croff Gilbert B. 335 Broadway, New York.  
 Crooks Arthur 32 Park pl. New York.  
 Curtiss Saml. 265 Broadway, New York.  
 Cutter Manly N. 47 Lafayette pl. New York.  
 Dacunha George W. 111 Broadway, New York.  
 Davison Darius, 19 Park pl. New York.  
 Diaper Frederic, 49 Wall st. New York.  
 Dinkelberg Frederick P. 18 Broadway, New York.  
 D'Oench Albert F. 16 Exchange pl. New York.  
 D'Orsay J. Stanley & Co. 67 Bible house, New York.  
 Duckworth & Dimham, 291 Broadway, New York.  
 Dudley Henry J. 1193 Broadway, New York.  
 Dunham Alfred A. 291 Broadway, New York.  
 Dunn Joseph M. 1193 Broadway, New York.  
 Eidlitz Cyrus L. W. 128 Broadway, New York.  
 Eidlitz Leopold, 128 Broadway, New York.  
 Farmer Henry 18 Broadway, New York.  
 Farnsworth James M. 140 Nassau st. New York.  
 Fernbach Henry 346 Broadway, New York.  
 Ficken H. Edwards 19 W 22nd st. New York.  
 Field William & Son 12 Wall st. New York.  
 Fisher A. B. 166 College st. Burlington, Vt.  
 Formachon Maurice, 154 Nassau st. New York.  
 Forster John M. 407 W 40th st. New York.  
 Foster Nathaniel G. 83 Cedar st. New York.  
 Franklin John B. 115 Waverley pl. New York.  
 Freeman George A. jr. 54 W 23rd st. New York.  
 Fuller George A. 2 Wall st. New York.  
 Gandolfo Emanuel 31 Union sq. New York.  
 Gardiner Wm. W. 1364 Washington av.  
 New York.  
 Garratt William J. 138 Tremont st. San Fran-  
 cisco, Cal.  
 Gilbert & Thompson, 51 New st. New York.  
 Gilbert Bradford L. 187 West st. New York.  
 Giles James H. 59 William st. New York.  
 Gilman Arthur 71 Broadway, New York.  
 Graham C. & Sons, 305 E. 43rd st. New York.  
 Grave William, 12 Stanton st. New York.  
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 Hamilton & Pistor, 35 Broadway, New York.  
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 Harding Geo. E. 2 Exchange pl. New York.  
 Harney Geo. E. 149 Broadway, New York.  
 Harrison Henry G. 67 William st. New York.  
 Harrison John F. 231 Broadway, New York.  
 Hatch Stephen D. 115 Broadway, New York.  
 Hatfield O. P. & R. F. 31 Pine st. New York.

## Architects—continued.

Hatfield Augustus, 2 Stone st. New York.  
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 Hebberd Chas. E. 33 Broadway, New York.  
 Hepp August 104 E 125th st. New York.  
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 Hoffmann Jobst. 153 4th av. New York.  
 Holly H. Hudson, 111 Broadway, New York.  
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 Jones Richard C. 42 Broad st. New York.  
 Jose William, 52 Bible h. New York.  
 Kafka Hugo, 234 Broadway, New York.  
 Kastner Julius, 744 Broadway, New York.  
 Kelley C. H. 1215 Broadway, New York.  
 Kendall Edward H. 71 Broadway, New York.  
 Kerby & Archer, 191 Broadway, New York.  
 Kilburn Henry F. 229 Broadway, New York.  
 Kimbell & Wisdell, 824 Broadway, New York.  
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 Kuhles William, 111 Broadway, New York.  
 Lamb & Rich, 486 Broadway, New York.  
 Lebrun W. & Son, 24 Park pl. New York.  
 Lederle & Co. 196 Broadway, New York.  
 Lienan Detlef, 111 Broadway, New York.  
 Lindsey Edward D. 32 Liberty st. New York.  
 Littell Emilen T. 48 Exchange pl. New York.  
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 Lord James Brown, 121 E. 23rd st. New York.  
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 Merritt Wm. J. 115 Broadway, New York.  
 Merry F. Charles, 11, Broadway, New York.  
 Mettam Charles, 393 Canal st. New York.  
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 New York.  
 Mook Robert, 176 Broadway, New York.  
 Moran Thomas J. 102 S. 5th av. New York.  
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 ph, 891 3rd av. New York.  
 71 Broadway, New York.  
 3. 15 Cortlandt st. and 42 E. 14th st.  
 am A. 121 E. 23rd st. New York.  
 . G. 47 Bible house New York.  
 28th W. 23rd st. New York.  
 lter, 68 Wall st. New York.  
 m S. 149 Broadway, New York.  
 E. 154 Nassau st. Tribune Building,  
 o. D. 149 Broadway, New York.  
 B. 245 Broadway, New York.  
 is A. 32 Park pl. New York.  
 pinwall & Russell, 4 Broad st. New  
 ian F. 264 W. 46th st. New York.  
 V. 29 Nassau st. New York.  
 eizer L. 155 Broadway, New York.  
 ert H. 121 E. 23rd st. New York.  
 jr. 178 E. 125th st. New York.  
 115 Nassau st. New York.  
 rt E. 115 Nassau st. New York.  
 am A. 47 Lafayette pl. New York.  
 rles W. 206 Broadway, New York.  
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 . 116 Canal st. New York.  
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 ia, 317, Broadway, New York.  
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Starkweather & Gibbs, 822 Broadway, New York.  
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 Thayer & Robinson, 67 Liberty st. New York.  
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 Thorn & Wilson, 1267 Broadway, New York.  
 Thorn Fredk. G. 115 Broadway, New York.  
 Thorp Alfred H. 31 Union sq. New York.  
 Townley Wm. E. jr. 32 Park pl. New York.  
 Townsend Ralph W. 101 st. c. 10th av. New York.  
 Tubby Wm. B. 115 Broadway, New York.  
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 Tuthill William B. 52 Broadway, New York.  
 Upjohn Richard M. 11 Broadway, New York.  
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 Van Norden Jay H. 1262 Broadway, New York.  
 Vaux & Radford, 71 Broadway, New York.  
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 Walther Bartholomew, 2255 3rd av. New York.  
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 Warner Samuel A. 132 Broadway, New York.  
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 Wendel H. T. 121 E. 23rd st. New York.  
 West W. Scott, 171 Broadway, New York.  
 Weston Theo. 120 Broadway, New York.  
 Wheeler Lorenzo B. 36 New st. New York.  
 Widmayer Wm. 219 7th av. New York.  
 Wightman, Jas. S. 2279 3rd av. New York.  
 Willard Daniel W. 55 Broadway, New York.  
 Wilson Bros. & Co. 115 Broadway, New York.  
 Wilson Robert, 82 Nassau st. New York.  
 Withers Fredk. C. Bible house, New York.  
 Wolfe Christopher, 111 Broadway, New York.  
 Wood John A. 240 Broadway, New York.  
 Wood William Halsey, 57 Broadway, New York.

## **Asbestos Manufacturers.**

*F.—Amiante (Fab. d').*

*G.—Asbest-Fabrikanten.*

Asbestos Packing Co. 169 Congress st. Boston,  
 Mass.  
 Asbestos Felting Co., 1 Pemberton square, Boston.  
 Mass.  
 Asbestos Felting Works, 108, Liberty st. New  
 York.  
 Asbestos Patent Fibre Co. 369 W. 11th st. New  
 York.  
 Backus J. 446 Cherry st. New York.  
 Bartlett F. L. Portland, Maine.  
 Bowker, H. L. & Co. 295 and 297 Franklin st.  
 Boston, Mass.  
 Boyd J. 428 Market st. Philadelphia, Pa.

**Asbestos Manufacturers—continued.**

Carpenter Geo. B. & Co. 208 S. Water st. Chicago. Ills.  
 Chalmers, Spence, & Co. 23 John & int. E. 9th st. New York.  
 Gilmour R. M. 82 John st. New York.  
 Johns H. W. Mfg. Co. 87 Maiden lane, New York.  
 McLaughlin Geo. T. & Co. 120 Fulton st. Boston, Mass.  
 Pyrolusite Manganese Co. 54 Cliff st. New York. E. H. Woodward, Secretary.  
 Reed J. L. 416 Arch st. Philadelphia, Pa.  
 Trainer Chas. W. & Co. 148 and 150, Oliver st. Boston, Mass.  
 Van Orden Edw. & Co. 72 Maiden la. New York.

**Automatic Electric Signalling Apparatus Makers.**

F.—

G.—

Shuey W. H. room 30 Cooper Union, New York.

**Battery Manufacturers.**

F.—*Piles Electriques (Fab. de).*

G.—*Electrische Batterien.*

Ahlstrom O. G. 162 William st. New York.  
 Bahr & Zahn, 108 Liberty st. New York.  
 Berge J. and H. (medical) 191 Greenwich and 95 Fulton sts. New York.  
 Boston Electric Co. 550 Washington st. Boston, Mass.  
 Waring Wm. E. 116 Canal st. New York.  
 BRUSH ELECTRIC CO. (PARENT CO.) 379 Euclid av. Cleveland, O. Storage Batteries, *see index to advertisers.*  
 Codman & Shurtleff (galvanic), 13 and 15 Tremont st. Boston, Mass.  
 ELECTRICAL SUPPLY CO. 17 Doy st. New York, *see index to advertisers.*  
 ELECTRO DYNAMIC CO. OF PHILADELPHIA (medical), 224 Carter st. Philadelphia, Pa. *see index to British advertisements.*  
 Flanigan J. R. & Co. (galvanic) 89 Court st. Boston, Mass.  
 FLEISCHMANN A. F. 1226 Chestnut st. Philadelphia, Pa. *see index to advertisers.*  
 FULLER SETH W. 22 Milk st. Boston, Mass.  
 Hendrich Dr. S. L. (medical) 467 5th av. New York. Above 40th st.  
 KIDDER JEROME MANUFACTURING CO. (medical) 820 Broadway, New York, *see index to advertisers.*  
 Kraft H. D., M.D. (medical) 467 5th av. New York. Above 40th st.  
 Law Telegraph Co. 140 Fulton st. New York.  
 Leach & Greene (galvanic) 1 Hamilton pl. Boston, Mass.  
 LECLANCHÉ BATTERY CO. 149 W. 18th st. New York, *see index to advertisers.*  
 PARTRICK & CARTER, 114 S. 2nd st. Philadelphia, Pa.

**Battery Manufacturers—continued.**

THE CHARLES WILLIAMS JR. B OF THE WESTERN ELECTRIC (vanic) 109 and 115 Court st. Boston *see index to advertisers.*  
 Wagner E. W. 36 John st. New York.  
 WOLFE L. W. & Co. (medical) 120 S. cor. Douglas st. Omaha, Neb.

**Belts—Medical—Galvanic.**

F.—*Appareils médicaux (Fab. d')*

G.—*Magnetische Heilapparate.*

Hafelfinger Fred. 343 W. 37th st. New York.  
 Hahn Abraham, 296 Broadway, New York.  
 Matthews & Co. 92 Church st. New York.  
 Norman A. 4 Queen st. E. Toronto, Can.  
 Whiting Belt Co. 111 Liberty st. New York.  
 Zeltmacher Adolph, 84 Duane st. New York.

**Black Lead Manufacturers**

F.—*Graphite (Fab. de).*

G.—*Reisblei.*

JOSEPH DIXON CRUCIBLE CO. City, N.J. & 68 Reade st, New York.  
 McKinley Edward, 90 Crosby st. New York.  
 May Samuel & Co. 14 to 20 Oliver st. Mass.  
 Phoenix Mfg. Co. H. D. Atwood, Taunton.  
 Taunton Crucible Co. West village, Taunton.  
 Webb Robert & Co. 103 North st. Boston.

**Brackets and Pins.**

(For Telegraph and Electric Light Poles)

F.—

G.—

Booth J. R. Burlington, Vt.  
 DOW GEO. Q. North Epping, N.H. *see index to advertisers.*  
 Freeman & O'Neil, Claremont, N.H.  
 Harris L. B. Manchester, N.H.  
 Kurtz Jac. S. & Bro. 92 and 94 Beechington, Vt.  
 Pierce & Linsley, Burlington, Vt.

**Braiding Machines for Covering**

F.—*Machines à recouvrir les fils.*

G.—*Maschinen zum Drahtenspinnen*

NEW ENGLAND BUTT CO. Providence, R.I., and 99 Chambers st. New York.  
 RHODE ISLAND BRAIDING MACHINE CO. 89 Aborn st. Providence, R.I. Manufacturers of braiding machines of all covering wire, and general machinery.

## ass and Copper Founders.

*F.—Bronze et cuivre (Usines de)*

*—Messing und Kupfer-Former.*

Department Supply Co. Eddy st. cor. ip st. Providence, R.I.

Bros. 30 and 261 Randolph, st. Chicago,

les H. & Co. 175 Lake st. Chicago, Ills.

y. & Co. 35 Clifford st. Providence, R.I.

. G. 132 1st st. Brooklyn, E.D. N.Y.

. 13 Adams st. Brooklyn, N.Y.

pper & Brass Works, 196 E. Front st. i, O.

s Co. Boston, Mass.

2 Front st. Brooklyn, N.Y.

. n 2nd st. Brooklyn, N.Y.

ORT BRASS CO. 19 Murray st. New *index to advertisers.*

'ampbell, 90 Plymouth st. Brooklyn,

Adolph, 155 Perry st. New York.

A. Blackstone in Eddy st. Provi- I.

rd S. r 14 Wooster st, New York.

nk, 117 Macdougall st. New York.

Son, 212 & 214 Lake st. Chicago, Ills.

IS MANUFACTURING CO. Tor- *onn. see index to advertisers.*

351 Adams st, Brooklyn, N.Y.

Manufacturing Co. 10 N Jefferson o, Ills.

Sons, 101 N. J. R. R. av. Newark, N.J.

B. B. 32 Elm st. Providence, R.I.

58 2nd st. Brooklyn, N.Y.

. 26 1st st. Brooklyn, E. D. N.Y.

mas 67 Vestry st. New York.

t F. 108 Eddy st. Providence, R.I.

. 350 1st st. Brooklyn, E. D. N.Y.

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Brass Foundry, 70 West st. Brooklyn,

ge, r 101 Wooster st. New York.

liam, 106 Cannon st. New York.

orge A. 803 3rd av. New York.

as. W. 169 Christopher st. New York.

r J. & Son, Philadelphia, Pa.

ing Co. cor. Broad & Hamilton sts. ia, Pa.

& Co. Pascoag, R.I.

in, 1368 Dekalbar st. Brooklyn, N.Y.

trick, 11½ James slip, New York.

01 Wooster st. New York.

or. Hope & 9th sts. Brooklyn, E. D.

V. 60 Friendship st. Providence, R.I.

yson E. & Co. 86 Market st. Chicago,

ibe Works Co. 159 & 161 Lake st. *Ills.*

## Brass and Copper Founders—continued.

Newall Williams & Co. Central Falls, R.I.

North Side Brass Wks. 57 N Wells st. Chicago, Ills.

NORTHROP A. C. Canal st. Waterbury, Conn. *see index to advertisers.*

Owens Owen, 226 Washington st. Chicago, Ills.

Pawtucket Brass Foundry (Henry Messter, pro.) Pawtucket, R.I.

Pepper J. 186 Plymouth st. Brooklyn, N.Y.

Phillips Thomas & Co. 75 to 85 South Main st. Providence, R.I.

Plume & Atwood M'facturing Co. (M. McRoberts, agent), 115 Lake st. Chicago, Ills.

Providence Brass Foundry (A. H. Manchester, jr. prop.) 460 Eddy st, Providence, R.I.

Puffer A. D. & Sons, 46 Portland st. Boston, Mass.

Reid S. & Co. 47 W Washington st. Chicago, Ills.

Renton F. A. 70 West st. Brooklyn, E. D. N.Y.

Rogers W. C. & Co. 313 N Market st. Chicago, Ills.

Schoener W. L. 226 N. 9th st, Brooklyn, N.Y.

Scoville Manufacturing Co. (E. H. Patterson, agt.) 183 Lake st. Chicago, Ills.

Smeeth E. 125 W Randolph st. Chicago, Ills.

Smith Amos D. 2nd cor. 219 Eddy st. Providence, R.I.

So. Brooklyn Works, cor. Van Brunt & Grummitt sts. Brooklyn, N.Y.

Stedman Pascal H. Newport, R.I.

Stieglitz W. 37 Lorrimer st. Brooklyn, N.Y.

Thomas A. & Bro. 88 Market st. Chicago, Ills.

Titus W. H. 377 Broadway, Brooklyn, N.Y.

Tubal-Cain Brass Works (J. H. Lehner & Co. props.) S Clinton st. cor. W Monroe, Chicago, Ills.

Turner E. S. & Co. 4 N. La Salle st. Chicago, Ills.

Union Brass Manufacturing Co. 97 to 103 Ohio st. Chicago, Ills.

Weber F. & Son, 43 S Canal st. Chicago, Ills.

White Stillman, 1 Bark st. Providence, R.I.

Winsor & Money, 122 Dorrance st. Providence, R.I.

Wohlfarth A. 132 Leonard st. Brooklyn, N.Y.

Wolff L. Manufacturing Co. 93 to 111 W. Lake st. Chicago, Ills.

Wollensak J. T. 225 Lake st. Chicago, Ills.

Worrall & Co. 28 Elm st. New York.

## Brass and Copper Manufacturers.

*F.—Bronze et Cuivre (Fab. de).*

*G.—Messing und Kupfer.*

ANSONIA BRASS & COPPER CO. 19 and 21 Cliff-st. New York, *see index to advertisers.*

Baker Brass Co. 11 Light st. New York.

Benedict & Burnham Manufacturing Co. (H. C. Hayden, agent), 57 Oliver st. Boston, Mass. 13, Murray st. New York, and Waterbury, Conn.

Blake Wm. & Co. cor. Brighton and Allen sts. Boston, Mass.

Bristol Brass & Clock Co. 33 Warren st. New York & Forestville, Conn.

## Brass and Copper Manufacturers—*contd.*

Brooklyn Brass and Copper Co. cor. Pearl and Front sts. Brooklyn, N.Y.  
 Cocker Bros. & Co. 11 Broad st. Boston, Mass.  
 Davis Thomas B. 215 E. 64th st. New York.  
 Delagraniere Jules, 218 Thompson st. New York.  
 Detroit Copper Mining Co. of Arizona, Detroit, Michigan.  
 Detroit & L. Sup. Copper Co. Detroit, Michigan.  
 Ehrich Emil, 91 Orchard st. New York.  
 Gillis J. P. & Co. 69 Beekman st. New York.  
 Hampel Otto, 191 North st. New York.  
 Hardy & Pinkman, 162 Elm st. New York.  
 Harnickell A. 83 Maiden la. New York. Agent for the Gunpowder Copper Works.  
 Harrison Chas. & Co. 16 W. 4th st. New York.  
 Hayden & Co. 86 Beekman st. New York.  
 Hendricks Brothers, 49 Cliff st. New York.  
 Heringer Charles, r 142 Wooster st. New York.  
 Hilton Edward G. 112 John st. New York.  
 Holmes, Booth & Haydens (D. F. Urquhart, agent), 18 Federal and 117 Congress sts. Boston, Mass.  
 Holmes & Wessell Metal Co. 525 W. 24th st. New York.  
 Homing J. 1368 Dekalbar st. Brooklyn, N.Y.  
 Huttling George, 151 Bleecker st. New York.  
 Hyatt W. L. 254 State st. Brooklyn, N.Y.  
 Janusch Fredk. G. 360 E. 19th st. New York.  
 Jenkins Bros. 71 John st. New York.  
 Jones J. & H. & Co. Limited, r 218 N. 2nd st. Philadelphia, Pa.  
 Kirk Bros. 118 Canal st.. Philadelphia, Pa.  
 Klemann Peter 172 Centre st. New York.  
 Knapp Manufacturing Co. 24 Frankfort st. New York.  
 Knight George W. Master, C. Mascher st. Philadelphia, Pa.  
 Krip Charles, 716 Cherry st. Philadelphia, Pa.  
 Lamboley Francis, 117 South 5th av. New York.  
 Lapp Davis C. 631 Filbert st. Philadelphia, Pa.  
 Lewisohn Bros. 121 and 123 Greene st. New York.  
 Lonergan J. E. & Co. 211 Race st. Philadelphia, Pa.  
 Long W. 136 1st st. Brooklyn, E. D. N.Y.  
 McCambridge & Co. 527 Cherry st. Philadelphia, Pa.  
 McCracken D. Albion N.Y.  
 McNab & Harlin Manufacturing Co. 56 John st. New York.  
 Manhattan Brass Co. 475 First av. New York.  
 MERCHANT & CO. Cliff st. c. Beekman st. New York, 525 Arch st. and 520 Cherry st. Philadelphia, Pa.  
 Middleberg & Christian, 514 Commerce st. Philadelphia, Pa.  
 Miller & Co. 718 Cherry st. Philadelphia, Pa.  
 Miller Edward & Co. Meriden, Conn.  
 Miners Copper Co. Detroit, Michigan.  
 Moffett James O. 119 Prince st. New York.  
 Morris Tasker & Co. Limited, 15 Gold st. New York.  
 Morse Jas. G. 76 John st. New York.

## Brass and Copper Manufacture

Mousley Charles, 1241 Howard st. Philadelphia, Pa.  
 Mullaney James, 204 E. 23rd st. New York.  
 Nageldinger John 140 Centre st. New York.  
 Nathan & Dreyfus, 92 Liberty st. and 1st av. New York.  
 N. B. Copper Co. New Bedford, Mass.  
 Nelson & Finkel, 430 E. 10th st. New York.  
 New Haven Copper Co. 290 Pearl st. New York.  
 NORTHROP A. C. 35 Canal st. New York, Conn. *see index to advertisers.*  
 Novelty Manufacturing Co. 20 Warren st. New York.  
 Ore Knott Copper Co. 6 Gray st. Baltimore, Md.  
 Orford Copper and Nickle Company (Point) Bayonne City, N.J.  
 Osborne & Cheesman Co. Ansonia, Conn.  
 Palmer Manufacturing Co. 106 Beekman st. New York.  
 Peck Bros. & Co. 72 Franklin st. New York, Conn.  
 Penna. Brass Works, 1226 Hamilton st. Philadelphia, Pa.  
 Perks Charles, 627 Arch st. Philadelphia, Pa.  
 Petsch Conrad, Franklin & Centre sts. Philadelphia, Pa.  
 Phelps, Dodge & Co. 11 Cliff st. New York.  
 Philadelphia Smelting Company, Ltd. 12th st. Philadelphia, Pa.  
 PHOSPHOR BRONZE SMELTING CO. Arch st. Philadelphia, Pa., *see index to advertisers.*  
 Plume & Atwood Manufacturing Co. Federal st. Boston, Mass.  
 Pounds Wm. H. 1729 S. 6th st. Philadelphia, Pa.  
 Prahar L. & Bro. 3 Mission pl. New York.  
 Reeves Paul S. 760 S. Broad st. Philadelphia, Pa.  
 Renton F. A. 70 West st. Brooklyn, N.Y.  
 Renz & Lindsey, 627 Arch st. Philadelphia, Pa.  
 Revere Copper Co. 242 South st. New York, Mass. and 47 Kilby st. Boston, Mass.  
 Rich Edwin S. 114 John st. New York.  
 Rider & Conley, 55 Water st. Pittsburgh, Pa.  
 Ross Edward, 114 Centre st. New York.  
 Saville Thomas, 1231 Buddens pl. Philadelphia, Pa.  
 Scheinper Wm. 138 Wooster st. New York.  
 Scoville Manufacturing Co. 419 Broadway, New York.  
 Sherman John 296 B'way, New York.  
 Somers Bros. cor. Front and Pearl sts. New York.  
 Stone Fredk. & Co. 62 Gold st. New York.  
 Strickrodt C. & Co. 136 Centre st. New York.  
 Suhr Emil, 140 Centre st. New York.  
 Summers & Hunt, 57 Haverhill st. Boston, Mass.  
 Talmage & Weidley, 259 N. 15th st. Philadelphia, Pa.  
 Taunton Copper Manufacturing Co. 11 Boston, Mass. and Taunton, Mass.  
 Taws & Hartmann, 1235 N. Front st. Philadelphia, Pa.  
 Thom & Payne, 123 W. 28th st. New York.  
 Tiebout W. & J. 33 Chambers st. New York.



## 1 Copper Manufacturers—*contd.*

Seymour Manufacturing Co. Torrington, Conn.

ss Manufacturing Co. 97 to 103 Ohio go, Ills.

ss Works, 247 W. 5th st. Cincinnati,

G. 321 E. 22nd st. New York.

J. r 142 Wooster st. New York.

Sons, 89 Chambers, and 71 Reade sts. k, and Ansonia, Conn.

RN & MOEN MANUFACTURING cester and Boston, Mass. & New York.

Brass Co. 296 Broadway, New York, y st. Providence R. I. Mills, Water-nn.

ro. 1608 Vienna st. Philadelphia, Pa.

& Mingle, N. 5th st. cor. Bark st. phia, Pa.

Daniel A. r 59 Ann st. New York.

sser, 83 Centre st. New York.

## 1 Copper Masters & Merchants.

*F.—Bronze et Cuivre.*

*G.—Messing und Kupfer.*

9 Liberty st. New York.

Fire Hose Manuf. Co. (Boston office 12 l.) Williams st., c. Spruce st. Chelsea,

Tube Works, 97 State st. Boston, Mass. Tube Works of Boston, 400 Locust st. phia, Pa.

. BRASS & COPPER CO. 19 and 21 New York, *see index to advertisers.*

ss Co. 11 Light st. and 62 Cedar York.

Burnham Manufacturing Co. 13 Murray York and Waterbury, Conn.

mile V. 109 Wooster st. New York.

rt, 481 9th av. New York.

PORT BRASS CO. Bridgeport, Conn. r York, *see index to advertisers.*

ass & Clock Co. 32 Warren st. New d Forrestville, Conn.

Brass & Copper Co. 100 John st. New cor. Pearl & Front sts. Brooklyn, N.Y.

Brothers, 82 Chambers st. New York.

Bros. Waterbury, Conn.

gister & Mnfg. Co. 49 Astor house, New

Copper Co. Phoenixville, Pa.

nford S. r. 14 Wooster st. New York.

ASS MANUFACTURING CO. (sheet led wire, etc.) Torrington, Conn. *see advertisers.*

W. G. & Co. 96 John and 19 Platt sts. rk.

liere Jules, 218 Thompson st. New York.

mes H. 61 Astor house, New York.

ana & Fitz, 110 North st. Boston, Mass.

. & Son, 105 Duane st. New York.

ames, 106 Cannon st. New York.

## Brass & Copper Masters & Merchants—

*continued.*

Griggs Elizur D. 63 Duane st. New York.

Holmes, Booth & Haydens, New York, Philadelphia, Pa., Waterbury, Conn. and London, England.

PHOSPIER BRONZE SMELTING CO.

Limited, 512 Arch st. Philadelphia, Pa, *see index to advertisers.*

## Brass Finishers.

*F.—Bronze.*

*G.—Messing-former.*

American Fire Hose Manufacturing Co. 12 Temple road, Boston, Mass. and at Chelsea, Mass.

Barnet Alexander, 85 Franklin st. Chicago, Ills.

Bent Thomas, 13 & 30 Market st. Chicago, Ills.

Blaesius Emile V. 109 Wooster st. New York.

Cahill John, 207 Centro st. New York.

Clark W. P. 33 Bowker st. Boston, Mass.

Connolly P. 351 Adams st. Brooklyn, N.Y.

Cory Charles & Son, 278 Division st. New York.

Cunningham James, 151 W. 29th st. New York.

D'Este & Co. 59 Beverley st. Boston, Mass.

Dinnen A. & J. 204 E. 29th st. New York.

French H. G. 199 Broadway, New York.

Graf J. cor. Quinnett & Throop sts. Brooklyn, N.Y.

Hallowell Albert, Lowell, Mass.

Hamilton John, Bridgeport, Conn.

Harris E. T. & Co. 103, 105, 107 W. Monroe st. Chicago, Ills.

Hartill William, r. 548 Grand st. New York.

Heathcote John, 170 Eddy, and 60 Friendship st. Providence, R.I.

Hilbert Edward, Lawrence, Mass.

Hohlweck George, 219 Bowery, New York.

Hopkins Charles H. Lyndonville, Vt.

Hubbard A. W. Fitchburg, Mass.

Hubert Baptist, 174 Worth st. New York.

Hyde Joseph, 103 W. 39th st. New York.

Johnson John A. 116 Pine st. Providence, R.I.

Kennedy John H. 713 7th av. New York.

Keune August, Franklin n. Centre st. New York.

Kimm Frederick, 5 Centre mkt. pl. New York.

Kleb George, r. 101 S. 6th av. New York.

Koch & Adenauer, r. 213 Grand st. New York.

Landers Edmund, 12 Jacob st. New York.

Lennon & Co. 292 Washington st. Boston, Mass.

Lesemann Henry, 97 Elizabeth st. New York.

McCann Peter, 154 South st. New York.

McKenna James J. & Brother, 424 E. 23rd st. & 396 Broome st. New York.

McNab & Harlin Manufacturing Co. 56 John st. New York.

Mahoney J. & P. 213 Grand st. New York.

Marshall Robert, r. 7 Allen st. New York.

Martin M. 83 South 5th av. New York.

May Henry, 140½ Pitt st. New York.

Mayhew, Payson E. & Co. 86 Market st. Chicago, Ills.

## Brass Finishers—continued.

Miller Thomas, 34 W. 3rd st. New York.  
 Mitchell R. & Co. 5 Haymarket sq. Boston, Mass.  
 Moge William, 418 W. 27th st. New York.  
 Moore Thomas, 80 Elm st. New York.  
 Morgan Henry, Springfield, Mass.  
 Morse Andrew J. & Son, 140 Congress st. Boston, Mass.  
 Mowry & Phillips, 126 Cross st. Boston, Mass.  
 N. E. Gauge Co. 380 Atlantic av. Boston, Mass.  
 Oehlmann Adolph, r. 381 Broome st. New York.  
 Palmenberg Joseph R. 466 Broome st. New York.  
 Payne John H. 33 W. 29th st. New York.  
 Payne Joseph S. 148 W. 33rd. st. New York.  
 Pearce Albert, 11 Hawkins st. Boston, Mass.  
 Power Maurice J. 5 Beekman & 218 E. 25th sts. New York.  
 Redfern W. C. 13 Bowker st. Boston, Mass.  
 Royle Charles, cor. Franklin and Centre sts. New York.  
 Sandermann Herman, 16 McNibbin st. Brooklyn, N.Y.  
 Sands & Baxter, 6 Reade st. New York.  
 Scanlon Michael, r. 120 Elizabeth st. New York.  
 Scheurer F. 68 Gerry st. Brooklyn, N.Y.  
 Schilling Peter, r. 43 Eldridge st. New York.  
 Schirmer Charles, r. 100 Wooster st. New York.  
 Schott Emanuel, 80 Elm st. New York.  
 Schrader August, r. 216 William st. New York.  
 Smith & Smart, Salem, Mass.  
 Staats & Dillmeier, 134 1st st. Brooklyn, E.D. N.Y.  
 Stevenson Henry, 97 Elizabeth st. New York.  
 Stone Henry N. 132 Commercial st. Boston, Mass.  
 Strater Herman & Sons, 78 Sudbury st. Boston, Mass.  
 Summers & Hunt, 57 Haverhill st. Boston, Mass.  
 Sweeney J. & Barrett, 3 Dutch st. New York.  
 Sweeney Edward, 4 Duane st. New York.  
 Thom Charles A. 123 W. 28th st. New York.  
 Thompson W. H. Springfield, Mass.  
 Vankuyck Henry & Son, 237 Centre st. New York.  
 Ward & Curley, 62 Sudbury st. Boston, Mass.  
 Watts J. E. Lawrence, Mass.  
 Whately George B. 139 Lewis st. New York.  
 Wilson David, 515 W. 33rd. st. New York.  
 Wolforth A. 132 Leonard st. Brooklyn, N.Y.  
 Wood Andrew, 387 Bowery, New York.  
 Woodhouse Daniel A. r. 59 Ann st. New York.  
 Zane Joseph & Co. 81 Sudbury st. Boston, Mass.

## Brass Workers Supplies and Tools.

*F.—Outils pour Usines de Bronze.*

*G.—Werkzeug für Messing-Formen.*

American Tool and Machine Co. 84 Kingston st. Boston, Mass.  
 Patterson H. T. & Co. 136 Centre st. New York.

## Brokers—Electrical Stock.

*F.—*

*G.—*

DELANO, HAINES & CO. Temple man st. New York, *see index to advertisers.*  
 HAINES BROS. 55 Broadway, New York, *see index to advertisers.*  
 Kohlsaat & Co. 30 Pine st. New York.  
 LYNCH & BANTA, 98 Washington st. Ills. *see index to advertisers.*  
 Saportas A. J. & Co. 58 Exchange pl. N.  
 Skeele Frank H. 55 Broadway, New York.  
 Whipple Geo. H. 58 Exchange pl. New

## Bronze Founders and Manufact

*F.—Fondeurs de Bronze.*

*G.—*

Allen W. H. 113 Market st. Philadelphia  
 Henry & Bonnard Bronze Manufactu general offices, 115 Broadway, r. 62 works, 237 and 239 Mercer st. New York.  
 ROEBLING JOHN A. SONS CO. N.J. San Francisco, Cal. and New York.

## Cable Manufacturers.

*F.—Câble télégraphique (Fab. de*

*G.—Kabel-Fabriken.*

AMERICAN ELECTRICAL WORKS Stewart st. Providence, R.I. *see index to advertisers.*  
 ELECTRICAL SUPPLY CO. 17 Dey York, & Ansonia, Conn. *see index to advertisers.*  
 DAY A. G. 120 Broadway, New York, *see index to advertisers.*  
 Holmes, Booth & Haydens, New York; Mass.; Philadelphia, Pa.; Waterbury and London, England.  
 NEW YORK ELECTRIC LINES CO. 39 Wall st. New York.  
 PHOSPHOR BRONZE SMELTING Limited, 512 Arch st. Philadelphia *see index to advertisers.*  
 TILLOTSON L. G. & Co. 5 and 7 Dey York. Factory, 139, 141, 143 Centre York, *see index to advertisers.*  
 WESTERN ELECTRIC CO. New Chicago, Indianapolis, and Boston, *see index to advertisers.*

## Carbon Manufacturers.

*F.—Charbons Electriques.*

*G.—Holzkohlen-Brennereien.*

Allen W. H. 113 Market st. Philadelphia  
 AMERICAN CARBON CO. St. Louis *see index to advertisers.*  
 BOULTON CARBON CO. Cleveland, O. *see index to advertisers.*  
 BRUSH ELECTRIC CO. (Parent Co.) Euclid av. Cleveland, O. *see index to advertisers.*

**Manufacturers—continued.**

CAL SUPPLY CO. 17 Dey st. New  
*index to advertisers.*

296 Pearl st. New York.

David, 13 Rutger st. Newark, N.J.

L. W. & CO. 120 South 14th st. cor.  
 st. and 206 N 16th st. Masonic block,  
 Neb.

**Iron Pipes and Fittings.**

ed, 43 Greene st. 1483 Broadway & 540  
 st. New York.

Wm. W. 85 Liberty st. New York.

**—Manufacturing & Analytical.**

*chimistes Industriels et Métallurgiques.*

*G.—Chemische Fabriken.*

W. & Co. 110 S. Charles st. Balti-  
 d.

& Bacon, 717 Clay st. San Francisco,

iline and Chemical Co. Albany, N.Y.

. 610 Arch st. Philadelphia, Pa.

Woodward & Co. Peoria, Ills.

I. M. 100 Reade st. New York.

ecour, 547 W. 18th st. New York.

F. & Co. 84 Front st. New York.

W. 153 Heyward st. Brooklyn, N.Y.

ory, 82 Water st. Boston, Mass.

E. 76 State st. Boston, Mass.

ames F. 4 State st. Boston, Mass.

den M. 402 Washington st. New York.

T. 19th c. Oxford st. Philadelphia, Pa.

Chromo Works, Charles st. c. Lexing-  
 Baltimore, Md.

emical Co. 59 Wabash av. Chicago, Ills.

m. W. & Co. 35 India st. Boston, Mass.

. Gray, 92 22nd st. Chicago, Ills.

emical Co. Long Eddy, N.Y.

1 J. P. 3 E. 14th st. New York.

Co. 116 Olive st. St. Louis, Mo.

A. 101 Post st. San Francisco, Cal.

J. & Co. 143 Maiden la. New York.

Marcus, 6 Barclay st. New York.

ames C. 96 Ashland blk. Chicago, Ills.

lapp & Co. 20 Liberty st. New York.

eph & Bro. 183 Pearl st. New York.

Johnson av. Brooklyn, N.Y.

C. C. 116 Front st. San Francisco, Cal.

. 81 4th av. Philadelphia, Pa.

Rathbone, 12 Cedar st. New York.

. 34 City Hall pl. New York.

filwaukee, Wis.

H. I. 71 Oakland st. Brooklyn, N.Y.

rett & Blair, 919 Chant st. Philadelphia,

110 Sutter st. San Francisco, Cal.

**Chemists—Manufacturing & Analytical.**

*—continued.*

Bourgougnon A. 26 W. 4th st. New York.

Bowker H. L. & Co. 295 & 297 Franklin st.  
 Boston, Mass.

Bragg E. B. 84 Broad st. New York.

Britton J. B. 339 Walnut st. Philadelphia, Pa.

Bromo-Chemical Co. 24 Liberty st. New York.

Brown J. J. & Sons, 185 Summer st. Boston,  
 Mass.

Brown Walter Lee, 105 Metropolitan blk. Chicago,  
 Ills.

Brugman F. & Son, 41 Ann st. New York.

Bullock & Crenshaw, 528 Arch and 531 North  
 sts. Philadelphia, Pa.

Burcey Chemical Co. Binghamton, N.Y.

Cabot Samuel jun. 70 Kilby st. Boston, Mass.

Castner H. Y. & Bro. 197 Pearl st. New York.

Chamvenet Reigis & Bro. 701 Pine st. St. Louis,  
 Mo.

Chapman Green & Co. 91 Washington st. Chicago,  
 Ills.

Chaskel Jas. 44 W. Broadway, New York.

Chemical Co. of Boston, 32 S. Charles st. Balti-  
 more, Md.

Chesapeake Chemical Works, 157 W. Fayette st.  
 Baltimore, Md.

Christian R. S. 814 Chestnut st. Philadelphia, Pa.

Church & Co. 129 Pearl & 82 Beaver sts. New  
 York.

Clausen E. Cleveland, O.

Clay J. jun. 60 Cedar st. New York.

Cochrane A. & Co. 55 Kilby st. Boston, Mass.

Colby F. F. 4th st. c. Market st. St. Louis, Mo.

Cooper Charles & Co. 194 Worth st. New York;  
 works, Newark, N.J.

Crane F. G. 53 Market st. Chicago, Ills.

Crouse J. L. A. 36 Beckman st. New York.

Cresson C. M. 417 Walnut st. Philadelphia, Pa.

Cruse E. F. 20 Bridge st. Brooklyn, N.Y.

Cumberland Chem. & Mnftg. Co. Cumberland,  
 Md.

Darlton Nelson & Co. 133 Water st. New York.

Davenport B. F. Mass. Coll. Pharm. Boston, Mass.

De Andreis B. 10 Vanderwater st. San Francisco,  
 Cal.

De La Fontaine M. 1707 Wabash av. Chicago, Ills.

Dibble Manufacturing Co. Trenton, N.J.

Dick Dundas & Co. 112 White st. New York.

Diecks Pharm. Ex. Co. 173 G'wich. st. New York

Dodge & Olcott, 88 William st. New York.

Donovan J. H. 122 Water st. Boston, Mass.

Doremus C. A. & R. O. 25 Union sq. New York.

Doremus R. O. 52 Union sq. New York.

Dorsay M. T. Eastern av. N. 1st st. Baltimore,  
 Md.

Doscher H. S. 2nd c. 1st st. Brooklyn, E.D. N.Y.

Draper John C. 429 Lexington av. New York.

Dreyfus Aaron & Co. 15 Cedar st. New York.

Dudley & Co. 8 Boerum pl. Brooklyn, N.Y.

Dudley Wm. L. Secretary American Iridium Co.  
 Cincinnati, O.

Eames Chas. J. 26 Pine st. New York.

Eaton A. K. 65 Henry st. Brooklyn, N.Y.

## Chemists—Manufacturing & Analytical

—continued.

Edrehi Isaac D. 227 Greenwich st. New York.  
 Eimer & Amend, 205 to 211 3rd av. New York.  
 Elliott, Hopke & Mattison, 197 Pearl st. New York.  
 Endermann Herman, 33 Nassau st. New York.  
 Erkenbrach J. 34 Platt st. New York.  
 Evanovitch G. 11 E. 10th st. New York.  
 Everett A. H. 1702 Filmore st. San Francisco, Cal.  
 Falkenan & Reese, 328 Montgomery st. San Francisco, Cal.  
 Fennel A. 8th st. cor. Vine st. Cincinnati, O.  
 Fisher D. Milwaukee, Wis.  
 Fletcher C. R. 209 Washington st. Boston, Mass.  
 Fongera E. 309 8th st. Brooklyn, N.Y.  
 Forest City Chemical Co. Cleveland, O.  
 Fuller J. P. 629 Hudson st. New York.  
 Fuston Charles B. 119 Pearl st. New York.  
 Gallatin A. H. 26 Cooper Union, New York.  
 Gallop Alfred, Sterling, Conn.  
 Gentsch T. & Co. Cleveland, O.  
 Gesner George W. 45 Cliff st. New York.  
 Gifford Wm. E. 54 Pine st. New York.  
 Goetschius H. 590 Washington st. New York.  
 Goldstone M. Alex. 113 Church st. Philadelphia, Pa.  
 Gordon W. L. Louisville, Ky.  
 Grasselli E. & Sons, Cleveland, O.  
 Greve T. L. A. 6th st. c. John st. Cincinnati, O.  
 Gross Bros. 264 Grand st. Brooklyn, N.Y.  
 Grund F. A. 121 Front st. New York.  
 Gurtermann Alex. 159 Front st. New York.  
 Habirshaw Wm. M. 159 Front st. New York.  
 Haines R. 912 Sansom st. Philadelphia, Pa.  
 Hampden Paint & Chem. Co. Springfield, Mass.  
 Hance Bros. & White, 309 Washington st. Boston, Mass.  
 Hanks H. G. 212 Sutter st. San Francisco, Cal.  
 Harnish Hugo H. 113 Water st. New York.  
 Havel L. 929 Broadway, Brooklyn, N.Y.  
 Hay G. 45 S. Diamond st. Allegheny, Pa.  
 Hayden W. R. Bedford, Mass.  
 Hayes H. P. & Co. Buffalo, N.Y.  
 Hecking F. & Co. 388 Pearl st. New York.  
 Heller Hirsh & Co. 2597 Archer av. Chicago, Ills.  
 Henes Wm. F. 159 E. 88th st. New York.  
 Heun E. Vine st. cor. Auburn st. Cincinnati, O.  
 Hiepe H. C. 104 John st. New York.  
 Hilt D. Lafayette, Ind.  
 Hinman C. W. 32 Hawley st. Boston, Mass.  
 Hiscox & Co. 163 William st. New York.  
 Hobart G. 1002 Diamond st. Philadelphia, Pa.  
 Huband T. I. 3rd st. c. Spruce st. Philadelphia, Pa.  
 Hubbard A. 338 E. 14th st. New York.  
 Huyck J. H. & Co. 111 N. Water st. Chicago, Ills.  
 Ide A. C. 81 4th st. San Francisco, Cal.  
 Irelan Wm. jun. 49 Merchants' exchange, San Francisco, Cal.  
 Jackson H. & Sons, 105 Raymond st. Brooklyn, N.Y.  
 James Walter M. & Co. 144 S. 4th st. Philadelphia, Pa.

## Chemists—Manufacturing & An

—continued.

Johnson & Shaw, 40 India whf. Boston  
 Johnston J. F. & Co. Indianapolis, Ind.  
 Johnston Wm. D. 118 Halbeck st. S  
 cisco, Cal.  
 Judge J. F. 6 st. cor. Mount st. Cincin  
 Judson W. E. Cleveland, O.  
 Keasley & Mattison, 332 N. Front  
 delphia, Pa.  
 Keith B. & Co. 41 Liberty st. New Yo  
 Keith B. & Co. Stamford, Conn.  
 Kendall E. D. 85 Fort Green pl. Brook  
 Kensel J. S. 15 New Chambers, New Y  
 Ker W. W. & Co. 113 Reade st. New Y  
 Kidder S. & Co. 46 Main st. Boston, M  
 King L. J. 16 Dey st. New York.  
 Klipstein August 52 Cedar st. New Yo  
 Kniffler B. 58 W. 4th st. Cincinnati, C  
 Krackowizer S. & Harnish, 113  
 New York.  
 Kraft C. H. 55 Fulton st. New York.  
 Kraus F. 469 McMillan st. Cincinnati,  
 Kroupa R. J. 506 6th st. New York.  
 Kurlbaum & Co. 1750 N. Front st. Phi  
 Pa.  
 Kurtz A. M. Turk cor. Hyde st. San I  
 Cal.  
 Lambert & Co. 307 Locust st. St. Loui  
 Landell John E. 186 Jackson st. Chicag  
 Ianszweert L. 360 4th st. San Francisc  
 Larkin & Scheffer, 209 to 218 Myrt  
 Louis, Mo.  
 Lawler C. J. 291 Nostrand av. Brookly  
 Ledoux & Ricketts, 10 Cedar st. New Y  
 Lee, Blackburn & Co. 59 Murray st. N  
 Lee James & Co. 72 Pine st. New York  
 Lee C. T. 45 Kilby st. Boston, Mass.  
 Lefevere J. B. 401 Kearny st. San Franc  
 Leffman H. 715 Walnut st. Philadelphia  
 Leis Chemical Manufac. Co. Lawrence,  
 Leland D. 60 Broad st. Boston, Mass.  
 Lengfeld A. L. Stockton st. cor. Grear  
 Francisco, Cal.  
 Lennig Charles & Co. (Limited) 1229  
 and 112 S. Front st. Philadelphia, Pa  
 Lilly Eli & Co. Indianapolis, Ind.  
 Lodi Chemical Works, 38 Platt st. New  
 Loeber J. 47 Pulaski st. Brooklyn, N.Y  
 Lombard C. 36 W. 4th st. Cincinnati, C  
 Lorentz & Rittler, 80 South st. Baltimor  
 Love E. G. 122 Bowery, New York.  
 Luckhardt C. A. & Co. 23 Stevenac  
 Francisco, Cal.  
 Luigo Oriazio, 4 University bldg. New  
 Luthy O. 220 Church st. Philadelphia.  
 Maas & Waldstein, 81 Greenwich st. N  
 Mahla & Chappell, Stewart av. cor.  
 Chicago, Ills.  
 Mullinekrodt Chemical Works, 2nd n.  
 crodt st. St. Louis, Mo.  
 Manufacturing Chemists Association, H  
 treas. Grey's Ferry rd. Philadelphia,  
 Marchand C. 635 Broadway, New York.



## Manufacturing & Analytical.

—continued.

A. 49 & 81 Clark st. Chicago, Ills.  
 Good & Co. Cleveland, O.  
 Embury, 99 N. Moore st. New York.  
 Four & Co. Minneapolis, Minn.  
 Matt & Co. 318 Clay st. San Francisco,

59 Broad st. Boston, Mass.  
 44 Wickliff st. New York  
 & Co. 59 Dey st. New York.  
 114 Franklin st. Brooklyn, N.Y.  
 122 Front st. New York.  
 A. 61 Broadway, New York.  
 D. W. Haverhill, Mass.  
 Chemical Works Co. 159 Front st.

Cedar st. New York.  
 Co. 159 Front st. New York.  
 Laboratory, 40 Broadway and 53  
 w York.

a. Assoc. 10 College pl. New York.  
 n Reduction and Chemical Works,  
 st. Chicago, Ills.  
 106 Broadway, New York.  
 Windsor, N.J.

& Co. 60 Maiden la. New York.  
 w D. 37 Dey st. New York.  
 ical Co. 85 John st. New York.  
 . C. & D. 5 William st. New York.  
 10th cor. Dickinson st. Philadelphia,

7. 113 Walnut st. Philadelphia Pa.  
 & Bro. 240 Pearl st. New York.  
 s & Co. 81 Maiden la. New York.  
 loden, 244 Plymouth st. Brooklyn,

.. 2 Platt st. New York.  
 . 1 Wall st. New York.  
 Vm. & Kullroff, 98 Liberty st.

B. O'Farrell st. c. Stockton st. San  
 Cal.

36 Platt st. New York.  
 1729 S. 2nd st. Philadelphia, Pa.  
 oston av. n. 166th st. New York.  
 gs, Washington. Univer. St. Louis,

eightman, 56 Maiden la. New York.  
 Mnfg. Co. 35 Broadway, New York.  
 errill, 95 Milk st. Boston, Mass.

58 Maiden la. New York.  
 Sacramento st. San Francisco, Cal.  
 li P. 1233 Filbert st. Philadelphia, Pa.  
 & Co. 11 Central st. Boston, Mass.  
 2 New Church st. New York.

5 S. 7th st. St. Louis, Mo.  
 rick 182 Fulton st. New York.  
 158 Chambers st. New York.

os. H. 73 Pine st. New York.  
 ; J. P. 171 Park av. Chicago, Ills.  
 l. 122 Front st. New York.

. L. 34 N. Calvert st. Baltimore, Md.  
 rris, 95 Liberty st. New York.

## Chemists—Manufacturing & Analytical.

—continued.

Root Leonard G. 123 Lexington av. New York.  
 Rosengarten & Sons, 26 Liberty st. New York.  
 Rothschild Joseph, 63 S. Canal st. Chicago, Ills.  
 Rudolphy Chas. B. 45 Liberty st. New York.  
 Rupp Wm. 117 Pearl st. New York.  
 Savage Joseph G. 119 E. 12th st. New York.  
 Saxoline Co. 63 Union st. Boston, Mass.  
 Schering & Glatz, 55 Maiden la. New York.  
 Schifflin Phillip, 213 Pearl st. New York.  
 Schmidt Chas. 294 Main st. Cincinnati, O.  
 Schmidt F. N. 3197 Madison st. Chicago, Ills.  
 Schoenfeld E. 906 S. 7th st. St. Louis, Mo.  
 Schoenfeld Harry, 159 North av. Chicago, Ills.  
 Scott & Brown, 108 Wooster and 575 Greenwich  
 sts. New York.

Scott Wm. 348 Julianna st. Philadelphia, Pa.  
 Seabury & Johnson, 21 Platt st. New York.  
 Sharpe & Dohmo, Pratt cor. Howard st. Balti-  
 more, Md.

Sharpless S. P. 13 Broad st. Boston, Mass.  
 Sherer Bros. 122 Front st. New York.  
 Sherer Edward, 402 Washington st. New York.  
 Siebel J. E. office, 92 La Salle st. ; laboratory,  
 242 Burling st. Chicago, Ills.

Simon J. P. L. & Co. 344 E. 23rd st. New York.  
 Simpson T. J. 217 4½ st. Washington, D.C.  
 Sloane T. O. C. 119 Pearl st. New York.  
 Smith L. H. & Co. 25 Michigan av. Chicago, Ills.  
 Springer A. 48 E. 2nd st. Cincinnati, O.

Squibb E. R. 36 Doughty st. Brooklyn, N.Y.  
 Squire F. B. & Co. 4 Cedar st. New York.  
 Standard Chemical Co. Cleveland, O.  
 Stange C. 407 W. Kinzie st. Chicago, Ills.

Star Chemical Works, 383 Pearl st. New York.  
 Stebbins J. H. jr. 68 Beaver st. New York.  
 Steele J. G. & Co. 635 Market st. San Fran-  
 cisco, Cal.

Steylaars & Rossi, Montgomery av. cor. Dupont  
 st. San Francisco, Cal.

Stillman & Koefoed, 40 Broadway, New York.  
 Stillman Thomas B & Co. 40 B'way, New York.  
 Stillwell & Gladding, 55 Fulton st. New York.  
 Strong C. G. 21 3rd st. San Francisco, Cal.

Symington Bros. & Co. 7 German st. Baltimore,  
 Md.

Taylor & Barker, 3 Boston and Maine Depot,  
 Lowell, Mass.

Taylor E. R. Cleveland, O.  
 Taylor J. K. Bridgeport, Conn.

Thayer H. & Co. Cambridgeport, Mass.  
 Thayer B. B. 1 New Montgomery st. San Fran-  
 cisco, Cal.

Tiffany Walton C., 10 Spruce st. New York.  
 Tilden & Co. 24 Liberty st. New York.

Toche, Grothe & Co. 59 Goerck st. New York.  
 Toledo Chemical Manufacturing Co. Toledo, O.  
 Torry W. P. 12 N. Holliday st. Baltimore, Md.

Tryon J. W. 36 Geary st. San Francisco, Cal.  
 Urban A. 497 10th av. New York.

Wagner J. C. Vine st. cor. Corryst. Cincinnati, O.  
 Wakelee & Co. Montgomery st. cor. Bush st. San  
 Francisco, Cal.

## Chemists—Manufacturing & Analytical.

—continued.

Walker J. E. & Co. 20 Cortlandt st. New York.  
Walker H. W. 109 Montgomery blk. San Francisco, Cal.  
Wallace S. 113 Walnut st. Philadelphia, Pa.  
Walldorf H. 376 Grand st. Brooklyn, N.Y.  
Walton Chemical Co. 23 & 92 Market st. Chicago, Ills.  
Warder Robert B. Prof. state and analytical chemist, North Bend, Ohio.  
Warner Wm. R. & Co. 49 Cedar st. New York.  
Wayne E. S. 45 Main st. Cincinnati, O.  
Weichert A. 101 Wall st. New York.  
Weld Chas. D. & Co. 60 Broad st. Boston, Mass.  
Wenzell Wm. T. 852 Market st. San Francisco, Cal.  
West John C. & Co. 183 W. Madison st. Chicago, Ills.  
Wheeler S. P. & Co. Bridgeport, Conn.  
Wheeler C. Gilbert 40, 42 and 81 Clark st. Chicago, Ills.  
White C. T. & Co. 54 Maiden la. New York.  
Widber J. H. Market st. c. 3rd st. San Francisco, Cal.  
Wilbor A. B. 854 Washington st. Boston, Mass.  
Wiley & Harris, 123 N. 7th street, Philadelphia, Pa.  
Williams C. P. 912 Sansom st. Philadelphia, Pa.  
Williamson D. D. 11 Dey street, New York.  
Wingate C. F. 119 Pearl st. New York.  
Wissman R. J. 1324 Cherry st. Philadelphia, Pa.  
With & Co. Springfield, Mass.  
Woodworth C. B. & Sons, Rochester, N.Y.  
Wright C. & Co. Detroit, Mich.  
Wright C. E. Marquette, Mich.  
Wright J. H. 620 Washington av. St. Louis, Mo.  
Wuth O. Patterson blk. 6th st. Pittsburgh, Pa.  
Wyman I. G. 142 Horatio st. New York.

## Contractors—Electric Light.

*F.—Eclairage électrique (Entrepreneurs d').*

*G.—Electrisches Licht—Contractoren.*

BRUSH ELECTRIC CO. (Parent Co.) 379 Euclid av. Cleveland, Ohio, *see index to advertisers.*  
Fairman James F. Inventors' Institute, Cooper Union, New York.  
HAINES BROS. 55 Broadway, New York.  
Nason Preston C. Franklin, Mass. & San Juan, Porto Rico, West Indies.  
PALMER WIRE CO. PALMER, MASS. *see index to advertisers.*  
Pride, Fraleigh & Kyle, 23 & 25 Dey st. New York.  
ROEBLING J. A. SONS CO. Trenton, N.J. New York and San Francisco, Cal.  
STANDARD ELECTRICAL WORKS (successors to Post & Co.) Cincinnati, Ohio, *see index to advertisers.*

## Contractors—Telegraph

*F.—Télégraphes—Entrepreneurs*

*G.—Telegrafenbau—Contractor*

DOW GEORGE Q. North Epping, *index to advertisers.*  
FAIRMAN JAS. F. Inventors' Institute, New York.  
HAINES BROS. 55 Broadway, New York, *index to advertisers.*  
Lewis & Mann, 220 State st. Boston, Mass.  
McNider Stanley, contractor for telephone, and electric light companies, Central America.  
Moore J. L. & Co. r. 7, 23 & 25 Dey st.  
PALMER WIRE CO. PALMER, MASS. *index to advertisers.*  
Pride, Fraleigh & Kyle, 23 & 25 Dey st.  
ROEBLINGS JOHN A. SONS CO. N.J. New York, and San Francisco  
STANDARD ELECTRICAL WORKS (successors to Post & Co.), Cincinnati, Ohio, *index to advertisers.*  
Subterranean Cable Co. 30 Court st. B

## Contractors—Telephone

*F.—Téléphones—Entrepreneurs*

*G.—Telephonbau—Contractoren*

Fairman Jas. F. Inventors' Institute, New York.  
HAINES BROS. 55 Broadway, New York.  
Moore J. L. & Co. r. 7, 23 & 25 Dey st. New York.  
PALMER WIRE CO. PALMER, MASS.  
Pride, Fraleigh & Kyle, 23 & 25 Dey st.  
ROEBLINGS JOHN A. SONS CO. N.J. New York, and San Francisco  
STANDARD ELECTRICAL WORKS (successors to Post & Co.), Cincinnati, Ohio, *index to advertisers.*

## Copper Companies and Merchants

*F.—Cuivre (Compagnies de).*

*G.—Kupfer-Gesellschaften.*

ANSONIA BRASS & COPPER CO. Cliff st. New York, *see index to advertisers.*  
Holmes, Booth & Haydens, New York, Philadelphia, Pa.; Waterbury, Conn.; and England.

## Coppersmiths.

*F.—*

*G.—Kupfer-schmiede.*

Barenklau Gustav A. 172 Forsyth st. New York.  
Bishop & Dertjeen, 210 South st. New York.  
Buhler Fredk. 92 Eldridge st. New York.  
Burkhard Peter, 180 Grand st. New York.  
Burkhard Thomas, 125 White st. New York.  
Burkhart Etta, 45 Allen st. New York.  
Carpenter Allen, 103 N. Moore st. New York.

## Withs—continued.

Reilly, 229 West st. New York.  
 Godfrey, 112 John st. New York.  
 Jetter, 148 E. 50th st. New York.  
 W. 213 Pearl st. New York.  
 Morris, 13 Essex st. New York.  
 Redk. C. 35 Desbrosses st. New York.  
 B. 127 av. D. New York.  
 Lie, 128 S. 5th av. New York.  
 MERY & CO. 105 Fulton st. New  
*index to advertisers.*  
 Thomas S. 65 Elizabeth st. New York.  
 Orth, 181 Prince and 122 Sullivan sts.  
 rk.  
 st, 232 W. 27th st. New York.  
 Harris, 47 Orchard st. New York.  
 enne, 44 W. 4th st. New York.  
 es & Co. 173 Christopher st. New York.  
 opold, 66 Centre st. New York.  
 mry & Co. 143 E. 31st st. New York.  
 liam, r. 92 Fulton st. New York.  
 rge W. 460 Greenwich st. New York.  
 John, steam copper works, 447 to 455  
 st. bet. ninth and tenth avs. and 273  
 New York.  
 William, 210 Centre st. New York.  
 n Chas. 189 E. Houston st. New York.

## Crucible Manufacturers.

*F.—Creusets (Fab. de).*

*G.—Schmelztiegel-Fabr.*

H. 191 Greenwich & 95 Fulton sts. New  
 Son, 114 William st. New York.  
 r. W. 116 Nassau st. New York.  
 W. 6 N. 5th st. Philadelphia, Pa.  
 W. 13th st. New York.  
 Commerlad, 207 State st. New York.  
 nbago Co. Ltd. 520 Walnut st. Phila-  
 Pa.  
 H. & Co. Jersey City, N.J.  
 t Co. 129 Maiden la. New York.  
 Meng, 955 N. 3rd st. Phila. Pa.  
 Co. 21st st. c. Smallman st. Pittgh. Pa.  
 DIXON, CRUCIBLE CO. 6 N. 5th st.  
 phia, Pa. and 68, Roade st., Jersey  
 J.  
 h Dalsell & Co. 355 Liberty st. Pitts-  
 a.  
 MERY & CO. 105 Fulton st. New  
*index to advertisers.*  
 Phillips, 126 Cross st. Boston, Mass.  
 A. 1537 N. Front st. Phila. Pa.  
 anufacturing Co. Taunton, Mass.  
 Co. 398 Bowery, New York.  
 Co. 1436 N. 6th st. Philadelphia, Pa.  
 3. 1334 Callowhill st. Philadelphia, Pa.  
 rucible Co. Taunton, Mass.  
 . 19th st. c. Callowhill st. Philadelphia,

## Designers and Draughtsmen.

*F.—Dessinateurs.*

*G.—Zeichner.*

CUMMING GEORGE, 219 E. 18th st. New York.  
 HURDLE JULIAN A. r. 6 Tribune bldgs. New  
 York. INVENTORS' DRAWINGS MADE FROM  
 ROUGH SKETCH, NO MODEL REQUIRED.  
 MOTT S. D. electrical expert r. 59 Astor house,  
 New York.  
 WARDEN JOHN H. North Bend, Ohio.

## Directory (Electrical) Offices.

*F.—Annuaire Electrique.*

*G.—Electrisches Addressbuch.*

BERLY'S UNIVERSAL ELECTRICAL DI-  
 RECTORY AND ADVERTISER, Cumming  
 & Brinkerhoff, 219 E. 18th st. New York.  
*Send for Circulars.*  
 Fairman Jas. F. Inventors' Institute, Cooper  
 Union, New York.

## Dynamo and Magneto Electric Machine Manufacturers.

*F.—Machines Dynamo et Magneto Electriques.*

*G.—Dynamo-Maschinen.*

Arnoux Hockhausen Electric Co. 217 and 221, E.  
 20th st. New York.  
 Ball C. E., N. E. cor. 22nd st. and 2nd av.  
 New York.  
 BRUSH ELECTRIC CO. (Parent Co.) 379  
 Euclid av. Cleveland, O., *see index to advertisers.*  
 COLBURN I. W. & CO. 129 MAINE ST.  
 FITCHBURG, MASS. MANUFACTURERS  
 OF DYNAMO MACHINES FOR ELECTRIC  
 LIGHTING AND ELECTRO PLATING.  
 Eddy A. H. 68 Market st. Hartford, Conn.  
 ELECTRICAL SUPPLY CO. 17 Dey st. New  
 York, and Ansonia, Conn., *see index to*  
*advertisers.*  
 ELECTRO DYNAMIC CO. OF PHILADEL-  
 PHIA, 224 Carter st. Philadelphia, Pa., *see*  
*index to advertisers.*  
 Fairman Jas F. Inventors' Institute, Cooper  
 Union, New York. Manufacturer of Dynamo  
 machines for electro plating.  
 Fuller Electrical Co. 44 14th st. New York and  
 Boston, Mass.  
 Gross F. 686-90 Craig st. Montreal.  
 Hanson, Van Winkle & Co. Newark, N.J. 92 &  
 94 Liberty st. New York.  
 Montreal Electrical Supply Co. Montreal.  
 Schuyler Electric Light Co. 64 Cedar st. New  
 York; factory, Hartford, Conn.  
 UNION ELECTRIC MANUFACTURING  
 CO. 7 & 9 Bond st. 145 Broadway & 86  
 Liberty st. New York, *see index to advertisers.*  
 U. S. ELECTRIC LIGHTING CO. 59 and 61  
 Liberty st. New York, *see index to advertisers.*  
 Van Depoele Electric Light Co. 203 and 205 Van  
 Buren st. Chicago, Ills.

**Dynamo and Magneto Electric Machine  
Manufacturers—continued.**

Wallace & Sons, 89 Chambers & 71 Reade sts. New York.  
WOLFE L. W. & CO. 120 S. 14th st. cor. Douglas st. Omaha, Neb. Electro Magnetic Engines.  
Zucker & Levett, Chemical Co. 540, W. 16th st. New York.

**Earthenware Manufacturers for  
Electrical Purposes.**

*F.—Appareils en grès.*

*G.—Thonwaaren-Fabriken.*

Fairman James F. Inventors' Institute, Cooper Union, New York.

**Electric Alarms—Burglars, Fire, Safes,  
Ships, Trains, &c.**

*F.—Avertisseurs électriques.*

*G.—Electrische Allarm-Fabr.*

Applegate's Electric Floor Mat Alarm Manufacturing Co. Mills bldgs. Broad st. New York.  
Automatic Fire Alarm Co. 52 Kilby st. Boston, Mass.  
Automatic Signal Telegraph Co. 283 Franklin st. Boston, Mass. and 294 B'way, New York.  
Baldwin L. S. & Co. 75 Madison st. Chicago, Ills.  
Beckford E. S. 3 Lagrange cor. Washington st. Boston, Mass.  
Bosch Bros. 29 Mechanic st. Newark, N.J.  
BOSTON ELECTRIC CO. 550 Washington st. Boston, Mass. *see index to advertisers.*  
Boston Electric Protection Association, 56 Summer st. Boston, Mass.  
BOWEN WM. J. Norwalk, O. *see index to advertisers.*  
BRUSH ELECTRIC CO. (Parent Co.) 379 Euclid avenue, Cleveland, Ohio, *see index to advertisers.*  
Chantelouys E. 587-97 Craig st. Montreal.  
Clarke Marion, 25 W Lake st. Chicago, Ills.  
CLARK W. C. 205 Federal st. Portland, Me. *see index to advertisers.*  
Crane M. G. & Co. 267 Washington st. Boston, Mass.  
Douglas F. A. over 28 Main st. Lockport, N.Y.  
Dowden George A. 841 Broadway, New York.  
Edwards & Co. office 41 Beaver st. factory 4th av. and 138th st. New York.  
Electro-Medical Manufacturing Co. New York.  
Fairman James F. Inventors' Institute, Cooper Union, New York.  
FLEISCHMANN A. F. 1226 Chestnut st. Philadelphia, Pa. *see index to advertisers.*  
FULLER SETH W. 22 Milk st. Boston, Mass.  
Gamewell Fire Alarm Telegraph Co. (Joseph W. Stover, pres.) 115 Congress st. Boston, Mass. and 1 1/2 Barclay st. New York.

**Electric Alarms—Burglars, Fire  
Ships, Trains, &c.—continued.**

Goodrich & Moore, 180 Main st, Buffalo  
Harbert Edw. E. & Co. 159 La Salle st Ills.  
Hazazer E. W. 33 Murray st. New York  
Heisler Electric Bell & Burglar Alarm to 817 S. 7th st. St. Louis, Mo.  
Hill Burglar Alarm Co. 346 W 14th York.  
Holmes' Burglar Alarm Telegraph Broadway, New York.  
Holmes E. T. & Co. 342 Washington Mass.  
HOLTZER CHAS. W. Brookline, Mass. *to advertisers.*  
Independent Electric Co. 1324 Chestnut Philadelphia, Pa.  
Kerner Electric Burglar Alarm Co. 15 Ashire st. Boston, Mass.  
Lane & Melcher, 357 Washington st. Boston  
LONGSTREET J. H. 9 Barclay York, *see index to advertisers.*  
Mason W. S. Attleborough, Mass.  
Mitchell, Robert & Co. 672 Craig st. Montreal  
Montreal Electrical Supply Co. Montreal  
Moses T. Crane & Co. 267 Boston st. New York  
New York Electric Matting Co. 15 Broadway  
Newman A. G. 1180 Broadway & 17 V New York. (Successor to Newman & Partrick & Carter, 114 S. 2nd st. Philadelphia  
Pearson & Jones, 79 John st. New York  
PINKHAM & SEAL, 38 Hudson st. phia, Pa. *see index to advertisers.*  
Pool A. A. & Co. 55 N. J. R. R. av. New York  
Pride, Fraleigh & Kyle, 23 & 25 De York.  
REDDING JEROME & CO. 30 H Boston, Mass. *see index to advertisers.*  
Rogers H. 119 Fulton st. New York.  
Roper & Co. 184 E 119th st. New York  
ROUSSEAU D. 138th st and 4th av. Broadway, New York.  
SCHOOLEY W. D. Richmond, Ind.  
Smith, Bridge & Co. 6 W 14th & 3 W 131 York.  
Smith & Rhodes' Electric Co. Limited clay st. New York.  
SMITH T. J. 81 3rd st. (two doors from Brooklyn, E.D. N.Y.  
Snyder J. P. 96 Fulton st. New York.  
STANDARD ELECTRICAL WORK sors to Post & Co.) Cincinnati, O. *advertisers.*  
Suffolk Electric Manufacturing Co. 25 st. Boston, Mass.  
Union Electric Works, 126 Clark st. Chi (Raslendell, propr.)  
UNION ELECTRIC MANUFACTURE 7 & 9 Bond st.; 86 Liberty st.; & 1 way, New York, *see index to advertisers.*  
United States Electric Fire Alarm graph) 72 Maiden la. New York.



## Alarms—Burglars, Fire, Safes, Trains, &c.—continued.

RE ALARM TELEGRAPH CO. 106 erty st. Utica. Albany br. 25 Steuben y, N.Y. *see index to advertisers.*

ELECTRIC CO. New York, Chicago, anapolis, Ind. and Boston, Mass., *see advertisers.*

V. & Co. 120 S. 14th st, cor. Douglas a, Neb.

dt & Co. 106 St. Mark's pl. New

## Annunciators and Call Bells.

F.—*Arertisseurs électriques.*

F.—*Electrische Hausglocken.*

lectric Manufacturing Co. 90 Lake st. Ills.

nest, 103 3rd av. Pittsburgh, Pa.

n, 108 Liberty st. New York.

S. 3 La Grange cor. Washington st. Iass.

. 22 Union sq. 4th av. side, New York.

ELECTRIC CO. 550 Washington st. Iass. *see index to advertisers.*

WILLIAM J. Norwalk, O. *see index to*

LECTRIC CO. (Parent Co.) 379 enue, Cleveland, Ohio, *see index to*

. C. 205 Federal st. Portland, Me.

A. over 28 Main st. Lockport, N.Y.

Co. 41 Beaver st. factory, 4th av. and New York.

ical Mnfg. Co. 157 E. 81 st. New

s. F. Inventors' Institute, Cooper ew York.

M. D. 12 Brattle st. Boston, Mass.

nciator Co. 73 Cornhill st. Boston,

ANN A. F. 1226 Chestnut st. ia, Pa. *see index to advertisers.*

ETH W. 22 Milk st. Boston, Mass.

Moore, 180 Main st. Buffalo, N.Y.

: Co. 38 Chardon st. Boston, Mass.

. M. 13 Kilby st. Boston, Mass.

ard E. & Co. 159 La Salle st. Chicago,

tric Bell & Burglar Alarm Co. St.

glar Alarm Telegraph Co. 518 Broad- York.

CHAS W. Brookline, Mass. *see index rs.*

ndreas, 309 N 3rd st. St. Louis, Mo.

her, 71 Sudbury st. Boston, Mass.

ET J. H. 9 Barclay st. New York, *advertisers.*

V. 22 New Church st. New York

G. 1180 B'way & 17 W. 28th st. New

## Electric Annunciators and Call Bells-- continued.

Ostrander W. R. & Co. 19 Ann st. New York.

Partrick & Carter, 114 S 2nd st. Philadelphia, Pa.

Pearce & Jones, 79 John st. New York.

PINKHAM & SEAL, 38 Hudson st. Phila- delphia, Pa. *see index to advertisers.*

Plumb C. 100 Niagara st. Buffalo, N.Y.

REDDING JEROME & CO. 30 Hanover st. Boston, Mass. *see index to advertisers.*

ROUSSEAU D. 138th st. & 4th av. office 181 Broadway, New York.

SCHOOLEY W. D. Richmond, Ind.

Shute & Talbett, Atlantic av. & Oliver st. Boston, Mass.

STANDARD ELECTRICAL WORKS, Cincin- nati, Ohio, *see index to advertisers.*

Smith & Rhodes Electric Co. Limited, 37 Barclay st. New York.

Stetson A. H. (buttons for) Brookline, Mass.

UNION ELECTRIC MANUFACTURING CO. 7 & 9 Bond st. New York.

WESTERN ELECTRIC CO. New York, Chi- cago, Ills., Indianapolis, Ind. and Boston, Mass. *see index to advertisers.*

WOLFE L. W. & CO. 120 South 14th st. cor. Douglas st. Omaha, Neb.

## Electric Apparatus for Lighting Gas.

F.—*Appareils Electriques pour Allumer le Gaz.*

G.—*Electrische Apparate zum Anzünden des Gases.*

BOSTON ELECTRIC CO. 550 Washington st. Boston, Mass. *see index to advertisers.*

BOWEN W. J. Norwalk, O. *see index to adver- tisers.*

BRUSH ELECTRIC CO. (Parent Co.) 379 Euclid avenue, Cleveland, Ohio. *see index to advertisers.*

Cincinnati Electric Gas Lighting Co. Cincinnati, O.

CLARK W. C. 205 Federal st, Portland, Me. *see index to advertisers.*

Douglas F. A. over 28 Main st, Lockport, N.Y.

Edwards & Co. 41 Beaver, factory 4th av. and 138th st. New York.

Electric Gas Lighting Co. 45 Milk st. Boston, Mass.

ELECTRICAL SUPPLY CO. 17 Dey st. New York, *see index to advertisers.*

Fairman Jas. F. Inventors' Institute, Cooper Union, New York.

FLEISCHMANN A. F. 1226 Chestnut st. Philadelphia, Pa. *see index to advertisers.*

FULLER SETH W. 22 Milk st. Boston, Mass.

Heisler Electric Light Co. St. Louis, Mo.

Holmes' Burglar Alarm Telegraph Co., 518 B'way, New York.

HOLTZER C. W. Brookline, Mass. *see index to advertisers.*

N. W. Electric Gas Lighting Co. 134, Dearborn & 77 Clark sts. Chicago, Ills.

PINKHAM & SEAL, 38 Hudson st. Philadel- phia, Pa. *see index to advertisers.*

## Electric Apparatus for Lighting Gas— *continued.*

Portable Electric Light Co. 28 Water st. Boston, Mass.  
 Pride, Fraleigh & Kyle, 23 & 25 Dey st. New York.  
 REDDING JEROME & CO. 30 Hanover st. Boston, Mass. *see index to advertisers.*  
 ROUSSEAU D. 4th av. nr. 138th st. New York, Office 181 B'way, bet. Cortlandt & Dey sts. New York.  
 SCHOOLEY W. D. gas lighter and extinguisher, Richmond, Ind.  
 STANDARD ELECTRICAL WORKS (successor to Post & Co.) Cincinnati, Ohio, *see index to advertisers.*  
 UNION ELECTRIC MANUFACTURING CO. 7 & 9 Bond st.; 86 Liberty st.; & 140 Broadway, New York, *see index to advertisers.*  
 WESTERN ELECTRIC CO. Chicago, Ills. New York, Indianapolis, Ind. and Boston, Mass. *see index to advertisers.*

## Electric Appliance Makers.

*F.—Appareils électriques.*

*G.—Fabrikanten von elektrischen Artikeln.*

BRUSH ELECTRIC CO. (Parent Co.) 379 Euclid avenue, Cleveland, Ohio, *see index to advertisers.*  
 Douglas F. A. over 28 Main st. Lockport, N.Y.  
 Edson's Speed and Pressure Recording and Alarm Gauges, office 77 Liberty st. New York.  
 Electric Plaster Co. 142 Fulton st. New York.  
 Pall Mall Electric Association of London, England; office, 842 Broadway, New York.

## Electric Bell Fitters and Contractors.

*F.—Sonneries électriques.*

*G.—Electrische Glocken.*

Boile M. 1019 Fulton st. near Grand av. Brooklyn, N.Y.  
 BOSTON ELECTRIC CO. 550 Washington st. Boston, Mass. *see index to advertisers.*  
 BRUSH ELECTRIC CO. (Parent Co.) 379 Euclid avenue, Cleveland, Ohio, *see index to advertisers.*  
 ELECTRICAL SUPPLY CO. 17 Dey st. New York, *see index to advertisers.*  
 Fairman Jas. F. Inventors' Institute, Cooper Union, New York, *see index to advertisers.*  
 FLEISCHMANN A. F. 1226 Chestnut st. Phila. Pa. *see index to advertisers.*  
 FULLER SETH W. 22 Milk st. Boston, Mass.  
 Harbert Edw. E. & Co. 159 La Salle st, Chicago, Ills.  
 Partrick & Carter, 114 S. 2nd st. Philadelphia, Pa.  
 Pickard E. L. 15 Water st. Boston, Mass.  
 Pride, Fraleigh & Kyle, 23 and 25 Dey st. New York.  
 Richter G. F. 4 W. 19th st. New York.  
 SCHOOLEY W. D. Richmond, Ind.  
 STANDARD ELECTRICAL WORKS, Cincinnati, O. *see index to advertisers.*

## Electric Bell Manufacture

*F.—Sonneries électriques (Fab.)*

*G.—Electrische Glocken-Fabriken*

American Bell Telephone Co. 95 Milk Mass.  
 Bahr & Zahn, 108 Liberty st. New York  
 BOSTON ELECTRIC CO. 550 Washington st. Boston, Mass. *see index to advertisers.*  
 BOWEN WM. J. Norwalk, O. *see index to advertisers.*  
 BRUSH ELECTRIC CO. (Parent Co.) Euclid avenue, Cleveland, Ohio, *see index to advertisers.*  
 Chantelouys E. 587-97 Craig st. Montreal  
 CLARK W. C. 205 Federal st. Portland, Me. *see index to advertisers.*  
 Davis & Watts, monument, cor. Bureau and E. St. Baltimore, Md.  
 Douglas F. A. over 28 Main st. Lockport, N.Y.  
 Edwards & Co. 4 av. and 138th st. New York  
 ELECTRICAL SUPPLY CO. 17 Dey st. New York, *see index to advertisers.*  
 Fairman Jas. F. Inventors' Institute, Cooper Union, New York.  
 FLEISCHMANN A. F. 1226 Chestnut st. Phila. Pa. *see index to advertisers.*  
 Frome T. J. 94½, Front st E. Toronto  
 FULLER SETH W. 22 Milk st. Boston  
 Harbert Edw. E. & Co. 159 La Salle st. Chicago, Ills.  
 Heisler Electric Light Co. St. Louis, Mo.  
 Holmes' Burglar Alarm Telegraph Co. Broadway, New York.  
 HOLTZER CHARLES W. Brooklyn, N.Y. *see index to advertisers.*  
 Martin J. M. 2080 Washington st. Boston  
 Meserole A. V. 22 New Church st. New York  
 Montreal Electrical Supply Co. Montreal  
 Newman A. G. 1180 Broadway & 17th st. New York. Successor to Newman & Partrick & Carter, 114 S. 2nd st. Philadelphia  
 PINKHAM & SEAL, 38 Hudson st. Philadelphia, Pa. *see index to advertisers.*  
 Plumb C. 100 Niagara st. Buffalo, N.Y.  
 Post & Co. Cincinnati, O.  
 Pride, Fraleigh & Kyle, 23 and 25 Dey st. New York.  
 REDDING JEROME & CO. 30 Hanover st. Boston, Mass. *see index to advertisers.*  
 ROUSSEAU D. 4th av. near 138th st. New York. Office 181 B'way, between Cortlandt & Dey sts.  
 Rumsey & Co. 93 Liberty st. New York  
 Smith T. J. 81 3rd st. (2 doors from Brooklyn, E.D. N.Y.)  
 STANDARD ELECTRICAL WORKS, Cincinnati, O. *see index to advertisers.*  
 Stearns & George, 37 Pearl st. Boston  
 THE CHARLES WILLIAMS JR. OF THE WESTERN ELECTRIC CO. Court st. Boston, Mass. *see index to advertisers.*  
 UNION ELECTRIC MANUFACTURING CO. 7 & 9 Bond st.; 86 Liberty st.; & 140 Broadway, New York, *see index to advertisers.*

**Bell Manufacturers—continued.**

**N ELECTRIC CO.** New York, Indianapolis and Boston, *see index to advertisers.*

**W. & Co.** 120 South 14th st, cor. st. Omaha, Neb.

**E.** 160 W. 27th st. New York (pneumatics).

**Electric Blasting Apparatus.**

**ELECTRIC CO.** (Parent Co.) 379 Euclid av. Cleveland, Ohio, *see index to advertisers.*

**n. F.** 186 Devonshire st. Boston, Mass.

**Rand Powder Co.** 29 Murray st. New York.

**t. H.** 25 Congress st. Boston, Mass.

**Electric Clocks & Synchronization.**

—*Horloges électriques (Fab. d').*

—*Electrische Uhren-Fabrikanten.*

**ELECTRIC CO.** (Parent Co.) 379 Euclid av. Cleveland, Ohio, *see index to advertisers.*

**Electric Clock Co.** Cincinnati, O.  
**James F. Inventors' Institute,** Cooper Union, New York.

**SETH W.** 22 Milk st. Boston, Mass.  
**Electric Light Co.** St. Louis, Mo.  
**leigh & Kyle,** 23 & 25 Dey st. New York.

**is,** Albany, Ga.

**U D.** 138th st. and 4th av. Manufacturing office 181 B'way, New York.

**Time Co.** New Haven, Conn.

**RD ELECTRICAL WORKS,** Cincinnati, *see index to advertisers.*

**LEGRAPH CO.** Temple ct. Beekman st. New York, *see index to advertisers.*

**N ELECTRIC CO.** New York, Indianapolis, and Boston, *see index to advertisers.*

**Electric Companies.**

—*Compagnies électriques.*

—*Gesellschaften für Electricität.*

**Electric Co.** 58 New Church st. New York.

**Electric Co.** Boston, Mass. & New Conn.

**ELECTRIC CO.** (Parent Co.) 379 Euclid av. Cleveland, Ohio, *see index to advertisers.*

**Electric Co.**

**E. Ernest Caduc Stearns** (electrician).

**Electric Companies—continued.**

*Secretary and Treasurer—*Geo. J. Morse

*Head-quarters—*141 Franklin st. Boston, Mass.

**Keith Electric Co.** 237 Broadway, New York.

**Knudson Electric Co. Ltd.** 39 Nassau st. New York.

**Rhode I. Electric Light Co.** 24 Butler ex. Providence, R.I.

**Union Electric Construction Co.** 43 Montgomery st. Jersey City, N.J.

**Electric Lamp Manufacturers—Arc.**

*F.—Lampes électriques à Arc.*

*G.—Electrische Lampen-Arc.*

**Britton Edward E.** 44 Court st. Brooklyn, N.Y.

**BRUSH ELECTRIC CO.** (Parent Co.) 379 Euclid av. Cleveland O. *see index to advertisers.*

**Fairman James F.** Inventors' Institute, Cooper Union, New York, *see index to advertisers.*

**Fuller Electrical Co.** 44 East 14th st. (Wheeler & Wilson building), Union sq. New York.

**Pride, Fraleigh & Kyle,** 23 & 25 Dey st. New York.

**SCHOOLEY W. D.,** Richmond, Ind.

**Schuyler Electric Light Co.** 64 Cedar st. New York. Factory—Hartford, Conn.

**UNITED STATES ELECTRIC LIGHTING CO.** 59 and 61 Liberty st. New York, *see index to advertisers.*

**UNION ELECTRIC MANFG. CO.** 7 and 9, Bond st. New York, *see index to advertisers.*

**Van Depoele Electric Light Co.** 203 and 205 Van Buren st Chicago, Ills.

**Electric Lamp Manfs.—Incandescent.**

*F.—Lampes électriques à Incandescence.*

*G.—Electrische Lampen-Glühlicht.*

**Britton Edward E.** 44 Court st. Brooklyn N.Y.

**BRUSH ELECTRIC Co.** (Parent Co.), 379 Euclid av. Cleveland, O. *see index to advertisers.*

**Edison Lamp Co.** Newark, N.J.

**Fairman James F.** Inventors' Institute, Cooper Union, New York, *see index to advertisers.*

**SWAN INCANDESCENT ELECTRIC LIGHT CO.** 853 B'way, New York, *see index to advertisers.*

**Electric Light Apparatus Manufacturers.**

*F.—Appareils pour l'éclairage électrique.*

*G.—Apparate für Electrisches Licht.*

**BERGMANN & CO.** 292 to 298 av. B. cor. 17th st. New York, *see index to advertisers.*

**BRUSH ELECTRIC Co.** (Parent Co.) 379 Euclid av. Cleveland, O. *see index to advertisers.*

**FAIRMAN JAMES F.** Inventors' Institute, Cooper Union, New York.

**HOLTZER CHARLES W.** Brookline, Mass. *see index to advertisers.*

## Electric Light Apparatus Manufacturers

—continued.

Schuyler Electric Light Co. 64 Cedar st. New York. Factory—Hartford, Conn.

UNION ELECTRIC MANFG. CO. 7 and 9, Bond st. 145 Broadway and 86 Liberty st. New York.

Van Depoele Electric Light Co. 203 & 205 Van Buren st. Chicago, Ills.

## Electric Light Companies.

(See List of Companies and Capital.)

*F.—Eclairage électrique (Compagnies d').*

*G.—Gesellschaften für elektrische Beleuchtung.*

Agencies and Companies of the Brush Electric Light in the United States, and some of the agencies abroad:—

Akron Brush Electric Light & Power Co. Akron, O.

Alpena Electric Light Co. Alpena, Mich.

Albany Electric Illuminating Co. 71 Trinity pl. Albany, N.Y.

Albuquerque Electric Light Co. Albuquerque, New Mexico.

Allegheny County Light Co. 11, 13 & 15 Virginia bet. Wood & Liberty sts. Pittsburgh, Pa.

American Electric & Illuminating Co. 28 School st. Boston, Mass.

American Electric Light Co. 58 New Church st. New York. Capital stock \$500,000, 10,000 shares. Inventors, Bohn, Bernstein, Moffatt & Chichester. This Co. has both Incandescent and Arc Lights.

American Electric Light Co. 540 W 16th New York. Capital \$400,000 in 20,000 shares. Inventor and electrician, H. J. Muller; chief promoter and capitalist, Alex. Levett.

AMERICAN ELECTRIC LIGHT CO. New Britain, Conn. & Boston, Mass. (Thompson-Houston system).

American Electric Underground Co. 216 S 3rd st. Philadelphia, Pa.

American Magneto-Electric Light Co. 39 B'way, New York.

Anglo-American Brush Electric Light Co. Lim. Belvedere rd. Lambeth, London, S.E., England.

Arnoux Electric Co. 227 E 20th st. New York. Capital stock \$100,000 in 1,000 shares, chief financial broker, Fredk. A. Potts, 110 Broadway, New York, electrician & inventor Arnoux.

Arnoux Electric Light Co. 68 Sears bldgs. Boston, Mass.

Atlantic & Pacific Electric Light Manufacturing Co. Camden, N.J. (inventors Franz Rabl & H. C. Sample).

Barrow Forbes & Co. Mexico, Mex.

Beers & Co. 163 W. 29th st. New York.

Bernstein Electric Lighting Mfg. Co. 41 Arch st. Boston, Mass.

Blanchard Light & Power Co. cor. Quay & West sts. Brooklyn, N.Y.

## Electric Light Companies—contd

BRUSH ELECTRIC CO. 379 Euclid land, O. (Parent Company).

Brush Electric Co. 7 South st. Baltimore

Brush Electric Lighting Co. 209 Wash Roger's bldg. Rooms 21 & 22, Boston

Brush Electric Light & Power Co. But

Brush Electric Light Co. 6 & 8 W.

Buffalo, N.Y.

Brush Electric Light & Power Co. Butte Ter.

Brush Electric Light Co. Chattanooga,

Brush Electric Light & Power Co. Colum

Brush Electric Light Co. 80 to 88 Chicago, Ills.

Brush Electric Light Co. 317 Plum nati, O.

Brush Electric Light & Power Co. 71 Cleveland, O.

Brush Electric Light Company, 81 and Detroit, Mich.

Brush Electric Light & Power Co. Galv

Brush Electric Light & Power Co. Hele

Brush Electric Light & Power Co. In Ind.

Brush Electric Light Co. Louisville, K

Brush Electric Light & Power Co. Mem

Brush Electric Light & Power Co.

Tenn.

BRUSH SWAN ELECTRIC LIGHT N.E. 853 Broadway, New York.

BRUSH ELECTRIC ILLUMINAT 853 Broadway, cor. 14th st. New Yo

Brush Electric Light & Power Co. Niag.

Brush Electric Light Co. Johnson st.

and 21st sts. Philadelphia, Pa.

Brush Electric Light Co. Rochester, N

Brush Electric Light & Power Co. Sav

Brush Electric Assn. 404 Market st. St.

Brush Electric Light & Power Co. Toj

Brush Electric Light & Power Co. Au

Brush Electric Light & Power Co. Ower

Brush Electric Light & Power Co. Kans

Brush Electric Light & Power Co. La C

Brush Electric Light Co. Eau Claire,

Brush Electric Light & Power Co. Mac

Brush Electric Light Co. Mobile, Ala.

Brush Electric Light Co. Montgomery,

Brush Electric Light Co. Tipton, Ia.

Brush Electric Light Co. Fairfield, Ia.

Brush Swan Electric Light Co. Cheyen

Brush Electric Light Co. Rock Island,

Brush Swan Electric Light Co. Tuscon

Brush Electric Light & Power Co. Ad

Brush Electric Light & Power Co. Kno

Brush Electric Light & Power Co. Los A

Brush Electric Light Co. Baltimore, M

Brush Electric Light Co. 5 Pembert

5 Lancaster st. Boston, Mass.

Brush Electric Light Co. 118 La Salle Ills.

Brush Electric Light Co. Cleveland, O

Brush Electric Light Co. Columbia, C

Brush Electric Light Co. Topeka, Kan



**Light Companies—continued.**

Electric Light & Power Co. Montgomery,  
Electric Light Co. Dayton, O.  
Electric Light Co. Virgin and Wood sts.  
gh, Pa.  
Electric Light Co. Providence, R.I.  
Electric Light Co. Richmond, Va.  
Electric Light Co. Williamsport, Pa.  
Electric Lt. & Power Co. St. Joseph, Miss.  
Electric Light & Power Co. St. Louis, Mo.  
ran Electric Light Co. of N.E. 209  
gton st. Boston, Mass.

hrauff, genl. agt. Swan Incandescent  
Light Co. for the Pac. Coast, care  
Mt. E. L. Co. Salt Lake City, Utah.  
tiss, 379 Euclid av. Cleveland, O.  
Electric Light Co. 17 St. Ann's bldgs.  
ancisco, Cal.  
Electric Light Co. 220 to 226 Jessie st.  
ancisco, Cal.  
i Electric and Calcium Light Co. 365  
. Cincinnati, O.  
i Electric Light Co. 161 W. Pearl st.  
ati, O.  
Electric Light Co. Toledo, O.  
Electric Co. Denver, Col.  
Electric Signal Co. 340 3rd av. New  
J. I. Conklin jr. president, Theo.  
secretary and treasurer.  
ut Electric Light Co. New Haven, Conn.  
ted Electric Light Co. Brooklyn, N.Y.  
al Electric Light Co. room 48, 115  
ay, New York.

Whitney Electric Co. James Ayars  
nt and manager, factory Fulton st. cor.  
erson st. office 155 La Salle st. Chicago,

Electric Light and Motive Power Co.  
l st. New York.  
Electric Light and Motive Power Co.  
er H. F. Averill, 120 Broadway, New  
Capital stock \$500,000 ; 50,000 shares.  
Electric Light Co. 115 Broadway, New  
nd Greenville, N.J.  
Electric Light Co. Dallas, Texas.  
Lester & Morris, Camden, N.J.  
Electric Light Co. 97 Fulton st. New

Electric Manufacturing Co. Middletown,  
and room 99 Boreel bldg. 115 Broadway,  
ork.

Electric Light Co. 82 Devonshire st.  
, Mass.

CO. FOR ISOLATED LIGHTING,  
al office 65 5th av. New York, Major S.  
on president, E. H. Johnson vice-presi-  
F. S. Hastings treasurer, M.F. Moore,  
r Borden general manager, Henry Alden  
Baltimore manager New England de-  
nt, George C. Fairbanks agent for  
nd and Western Pennsylvania.

**Electric Light Companies—continued.**

Edison Co. for Isolated Lighting, 6 Ledger bldg.  
6th and Chestnut sts. Philadelphia, Pa. Agency  
—States of Pennsylvania, New Jersey and  
Delaware.  
Edison Electric Illuminating Co. of New York,  
65 5th av. New York, Norvin Green president,  
S. B. Eaton vice-president, F. S. Hastings  
treasurer and acting secretary.  
Edison Electric Illuminating Co. of Lawrence,  
Mass. F. E. Clarke president, E. H. Lord  
secretary, James H. Eaton treasurer.  
EDISON ELECTRIC LIGHT CO. 65 5th av.  
New York, S. B. Eaton president, F. S. Hastings  
treasurer and acting secretary.  
Edison Electric Light Co. 257 Washington st.  
Boston, Mass.  
Edison Electric Light Co. of Europe, Limited,  
65 5th av. New York.  
Edison Spanish Colonial Light Co., capital stock  
\$100,000, 1,000 shares. To work Edison's in-  
ventions in Cuba and other Spanish colonies.  
Electric Gas Lighting Co. 45 Milk st. Boston,  
Mass.  
Electric Illuminating Co. Albany, New York.  
Electric Light Co. 180 A st. Washington, D.C.  
Electric Mnfg. Co. 1020 Arch st. Phila. Pa.  
Elgin Electric Light Co. Elgin, Ills. G. S.  
Bowen, President; G. E. Bowen, Secretary  
and Treasurer.  
Evansville Brush Electric Light and Power Co.  
205 upper 3rd st. Evansville, Ind.  
Excelsior Electric Co. 68 Duane st. New York.  
Fargo Electric Light and Power Co. Fargo, Da.  
Fergus Brush Electric Co. Fergus Falls, Minn.  
Fuller Electrical Co. 44 14th st. New York,  
with branches in Boston and Worcester, Mass ;  
Providence, R.I.; Hartford, Conn. ; Brooklyn,  
N.Y.; Jersey City and Patterson, N.J.; Phila-  
delphia, Lancaster and Scranton, Pa.; Syracuse,  
Rochester and Buffalo, N.Y.; Pittsburgh, Pa.;  
Wheeling, W. Va. ; Steubenville, Xenia and  
Dayton, O. ; Grand Rapids, Mich. Chicago ;  
Springfield & Belleville, Ills. & St. Louis, Mo.  
GRAMME ELECTRIC LIGHT CO. 115  
Broadway, New York.  
Grand Rapids Electric Light and Power Co.  
Grand Rapids, Mich.  
Hathaway Electric Light and Power Co. 33 Astor  
h. New York and 46 School st. Boston, Mass.  
HEISLER ELECTRIC LIGHT CO. 809 to 817  
S. 7th st. St. Louis, Mo.  
Higgs Electric Light and Power Co. New York.  
Capital stock \$500,000, 100,000 shares. Elec-  
trician Paget Higgs.  
Hill & Jordan Columbus, Ga.  
Horne Fredk. W. 92 La Salle st. Chicago, Ills.  
Houston Electric Light and Power Co. Houston,  
Texas.  
Houston Thomson Electric Light Co. 631 Arch  
st. Philadelphia, Pa.  
Hussey Electric Co. 46 Bond st. New York. In-  
ventor and electrician C. A. Hussey, chief pro-  
moter A. S. Dodd.

## Electric Light Companies—continued.

Jablochkoff Electric Lighting Co. 154 Nassau st. New York.

Jablochkoff Electric Lighting Co. of N.E. 18 Post office sq. Boston, Mass.

Keith Electric Co. 237 Broadway, New York.

Kurezyor Pedro, Electric Light Co., Rio de Janeiro, Brazil, S. America.

Langley Electric Light Co. Ann Arbor, Mich. Inventor and electrician Prof. J. W. Langley.

Leggett W. W. 88 Griswold st. Detroit, Mich.

Levett Muller Electric Light Co. 1003 Chestnut st. Phila. Pa.

Light and Force Co. room 11 and 12. 234 Broadway, New York.

Lowell Electric Light Co. Lowell, Mass.

Lugo Dynamo Electric Co. Washington sq. New York, capital stock \$100,000, 1000 shares. Inventor and electrician Ozario Lugo, chief promoters and capitalists S. L. M. Barlow and Charles G. Francklyn.

Manchester Electric Light Co. Manchester, N.H.

Markland Electric Light Power Co. 30 Broad st. room 86, New York. Capital stock \$600,000 600,000 shares.

Markland Electric Light and Power Co. 30 Broad st. (room 87) New York.

Maxim Electric Light Co. 7th av. cor. Smithfield st. Pittsburgh, Pa.

Maxim Electric Light and Power Co. 617 Arch st. Philadelphia, Pa.

Metropolitan Electric Light and Power Co. 15 Cortlandt st. New York.

Middletown Electric Light Co. Middletown, O.

Michigan Iron Works Light & Power Co. Grand Rapids, Mich.

Minnesota Brush Electric Co. Minneapolis, Minn.

Monopole Electric Light Co. Troy, N.Y. owners of patents to Clinton M. Ball and C. A. Seeley.

Mutual Electric Light and Supply Co. 37 Wall st. New York. Capital Stock \$500,000, 200,000 shares. This is the Co. owning C. E. Long's patents.

National Underground Electric Co. 216½ Walnut st. Philadelphia, Pa.

Newark Electric Lt. & Power Co. Newark, N.J.

N.E. Western Electric Light Co. 267 Washington st. Boston, Mass.

New York & Brooklyn Electric Light Co. 22 Cortlandt st. New York.

New York Electric Light Association, 23 Dey st. room 5. Capital stock \$300,000, 3,000 shares. A. Wirsching and Leo Daft inventors, factory Greenville, N.J., laboratory 32 Centre st. New York, W. M. Landrum, Leo Daft and Hugo Rothschild trustees.

New York Electric Light Co. 185 5th av. and 10 Cortlandt st. New York, J. C. Chamberlin manager.

New York Elec. Motive Power Co. 13 Dey st. New York.

Ogden Electric Light Co. Ogden, Utah.

Olmsted Electric Light & Power Co. 7 Beckman st. New York.

## Electric Light Companies—continued.

Pacific Electric Co. 330 Gutta st. San F. Cal.

Penn. Elec. Lt. & Storage Co. 1001 Che Philadelphia, Pa.

Portable Co. 128 Pearl st. New York.

Portable Elec. Lt. Co. 79 Water st. Boston.

Portland Electric Light Co. Portland, Me.

Post & Co. 161 W. Pearl st. Cincinnati.

Potter Jotham, c/o Messrs. Walsh, Ha Yokohama, Japan.

Power Light & Heating Co. Salt Lake City.

Racine Elec. Lt. & Power Co. Racine, Wis.

Redman George A. manager Brush Elec. 11 Wilders Arcade, Rochester, N.Y.

Rhode Island Elec. Ltg. Co. rear 270 Providence, R.I.

Ridall & Ingold, 116 Market st. Pittsburgh.

Rochester Electric Light Co. Rochester.

Rocky Mountain Elec. Lt. Co. Salt L. City.

St. Paul Electric Light & Power Co. 1 Minn.

Salem Electric Light Co. Salem, Mass. (Shannon, supt.)

San Jose Brush Electric Light Co. 284 S. st. r. 9, San Jose, Cal.

San Antonio Electric Co. San Antonio, Tex.

Schuyler Electric Light Co. 64 Cedar York Factory, Hartford, Conn.

Shanghai Electric Co. Shanghai, China.

Sheehy R. J. Norfolk, Va.

Sheridan Electric Light Co. of New York Broadway, manufactory 138 Jane York (capital \$500,000 in 10,000 shares).

Smith & Rhodes Electric Co. Limited, 1 cor. 17th st. New York.

South Bend Electric Light Co. South B.

South Western Brush Electric Light Co. 38 Union st. New Orleans, La.

Springfield Electric Light Co. Springfield.

Standard Electric Light Co. 211 Centre York, patents of A. G. Holcombe.

Stockly C. E. 34 Chestnut st. Cleveland.

Swift Electric Light Co. E. Saginaw, Mich.

**SWAN INCANDESCENT ELECTRIC CO.** 853 Broadway, New York, *see advertisers.*

Swan Incandescent Electric Light Hampden st. Boston, Mass.

Sweet John, 124 Dearborn st. Chicago.

**THOMSON-HOUSTON ELECTRIC** Devonshire st. Boston, Mass.

Thompson-Houston Electric Light & works 1426 Callowhill st. Philadelphia.

Thompson-Houston North Western Light & Power Co. of Chicago capital Thom. S. Crapp, Lafayette, Ind.

Toledo Brush Electric Light Co. Toledo.

**UNION ELECTRIC MANUFACTURING CO.** 31 Milk st. Boston, Mass. and 145 E New York (Parker C. Chandler Frank W. Jones vice-president & supt. C. Andrews treasurer, Ralph V. business manager).

**Light Companies—continued.**

lobe Electric Light Co. 297 5th av. New  
capital stock \$6,000,000, 60,000 shares.  
or and electrician E. L. Morse).  
etric Illuminating Co. Charleston, Sc.  
ates Electric Light Co. Baltimore, Md.  
STATES ELECTRIC LIGHTING  
and 61 Liberty st. New York, *see*  
*advertisers.*  
ates Electric Lighting Co. Newark,  
  
ates Illuminating Co. 59 & 61 Liberty  
r York.  
oele Electric Lighting Co. 203 & 205  
ren st. Chicago, Ills. (inventor and elec-  
C. J. Van Depoele.)  
armor Co. 99 Court st. Boston, Mass.  
O. Henck's Opera house, Cincinnati, O.  
Edison Light Co. Chicago, Ills. Con-  
g the States of Illinois, Iowa and Wis-  
Anson Stager president-gen. John M.  
vice-president, D. H. Loederbach trea-  
George H. Bliss general superintendent).  
Electric Light Co. Chicago, New  
Indianapolis and Boston.  
Electric Light Co. 328 Montgomery st.  
ancisco, Cal.  
Electric Light Co. Newark, N.J.  
Reflector Co. 70 Kilby st. (room 42)  
, Mass.

**ic Light Fixtures and Fittings.**

*-Appareils pour la lumière électrique.*

*-Apparate für electrische Beleuchtung.*

Paucoast Manufacturing Co. 70 Wooster  
Green sts. New York.  
A. S. & Co. 1293 Broadway, New York.  
Joseph S. 168 Centre st. New York.  
ANN & CO. 292 to 298 av. B. cor.  
t. New York, *see index to advertisers.*  
N ELECTRIC CO. 550 Washington st.  
t, Mass. *See index to advertisers.*  
& Hubbard Manufacturing Co. 21  
y st. and 26 Park pl. New York.  
ELECTRIC Co. (Parent Co.) 379 Euclid  
aveland, Chio. *See index to advertisers.*  
& Son, 129 Mercer st. New York.  
ham James, 151 W. 29th st. New York.  
on Thos. & Son 74 E 9th st. New York.  
Smith, 42 S 5th av. New York.  
Mfg. Co. 43 Chambers st. New York.  
Co. 194 Hester st. New York.  
n & Bros. 104 Centre st. New York.  
George H. & Co. 23 University pl.  
York.  
. S. & Co. 1293 Broadway, New York.  
e Fredk. 7 W 4th st. New York.  
ELL, VANCE & CO. 836 & 838 Broad-  
72 E 13th & 503 W 24th sts. New York.  
*ex to advertisers.*

**Electric Light Fixtures & Fittings—  
continued.**

MOORE ALFRED F. 200 & 202 N 3rd st.  
Philadelphia, Pa. *See index to advertisers.*  
Oxley & Giddings 113 Walker st. New York.  
Palmers James F. & Son 47 University pl.  
New York.  
Patterson & Co. Limited, 17 W Houston st.  
New York.  
Royle Charles cor. Franklin & Centre sts. New  
York.  
Ryan, May & Latus, 38 Bleeker st. New York.  
Schapland Albert G. 209 Centre st. New York.  
Schneider, Campbell & Co. 7 Union sq. and 20  
E 15th st. New York.  
Standard Manufacturing Co. 9 Bond st. New  
York.  
Titsinks & Phillips, 207 Centre st. New York.  
Travis & Ferry 140 Greene st. New York.  
UNITED STATES ELECTRIC LIGHTING  
CO. 59 & 61 Liberty st. New York, *see index to*  
*advertisers.*  
Williams John 115 E. 13th st. New York.

**Electric Light Wiring.**

*F.—Fils pour la lumière électrique.*

*G.—Draht für electrisches Licht.*

BERGMANN & CO. 292 to 298 av. B cor. 17th  
st. New York, *see index to advertisers.*  
BRUSH ELECTRIC CO. (Parent Co.) 379  
Euclid av. Cleveland, O. *See index to advertisers.*  
UNITED STATES ELECTRIC LIGHTING  
CO. 59 & 61 Liberty st. New York, *see index*  
*to advertisers.*

**Electric Locks.**

*F.—Serrures électriques.*

*G.—Electrische Schlösser.*

Pride, Fraleigh & Kyle, 23 & 25 Dey st.  
New York.

**Electric Measuring Instrument Makers.**

*F.—Appareils Servant aux Mesures électriques.*

*G.—Electrische Mass-Instrumente.*

BRUSH ELECTRIC CO. (Parent Co.) 379 Euclid  
av. Cleveland, Ohio. *See index to advertisers.*  
ELECTRICAL SUPPLY CO. 17 Dey st. New  
York, *see index to advertisers.*  
FAIRMAN JAMES F. Inventors' Institute,  
Cooper Union, New York. *See index to adver-*  
*tisers.*  
HOLTZER CHAS. W. Brookline, Mass. *see*  
*index to advertisers.*  
WESTERN ELECTRIC CO. New York,  
Chicago, Indianapolis and Boston, *see index*  
*to advertisers.*

## Electric Railways.

*F.—*

*G.—*

Daft Electric Railway Co. New York and Greenville, N.J.

Edison Electric Railway Co. Menlo Park. N.J.

## Electric Specialities Makers.

*F.—*

*G.—*

Beile M. 1019 Fulton st. nr. Grand av. Brooklyn, N.Y.

BRUSH ELECTRIC Co. (Parent Co.) 379 Euclid av. Cleveland, Ohio. *See index to advertisers.*

FAIRMAN JAMES F. Inventors' Institute, Cooper Union, New York. *See index to advertisers.*

FLEISCHMANN A. F. 1226 Chestnut st. Philadelphia, Pa. *see index to advertisers.*

Pride, Fraleigh & Kyle, 23 & 25 Dey st. New York.

## Electric Street Lamp Manufacturers.

*F.—Lampadaires pour l'éclairage électrique.*

*G.—Lampfosten für electrisches Licht.*

Alta Mfg. Co. 175 Washington st. Boston, Mass.

Bartlett Lamp Manufacturing Co. 35 Howard st. New York.

Benney John & Son 344 Atlantic av. Boston, Mass.

Berry W. B. & Co. 70 North st. Boston, Mass.

BRUSH ELECTRIC Co. (Parent Co.) 379 Euclid av. Cleveland, Ohio. *See index to advertisers.*

Dietz R. E. 54 Fulton st. New York.

Globe Gas Light Co. 77 Union st. Boston, Mass.

Globe Street Lamp Co. Eagle av. cor. John st. Morrisania, N.Y.

Patterson Co. Limited, 17 W Houston st. New York.

SCHOOLEY, W. D. Richmond, Indiana.

United States Street Lighting Co. 54 Kilby st. New York.

## Electric Switch Manufacturers.

*F.—Commutateurs (Fab. de).*

*G.—Electrische Weichen.*

BRUSH ELECTRIC Co. (Parent Co.) 379 Euclid av. Cleveland, Ohio. *See index to advertisers.*

Cowles C. & Co. Newhaven, Conn.

POST & CO. S W cor. Pearl & Elm sts. Cincinnati, O.

SCHOOLEY W. D. Richmond, Ind.

STANDARD ELECTRICAL WORKS, Cincinnati, O., *see index to advertisers.*

WESTERN ELECTRIC CO. New York, Chicago, Boston and Indianapolis, *see index to advertisers.*

## Electric Toys.

*F.—Jouets électriques.*

*G.—Electrische Spielzeug.*

Bliss R. Manufacturing Co. Pawtucket, I  
FAIRMAN JAMES F. Inventors' I  
Cooper Union, New York, *See index to*  
*tisers.*

McAllister T. H. 49, Nassau-st. New Yo  
Meyer Curt. W. 11 Dey st. New York.

Novelty Electric Co. S W cor. 5th & 50  
sts. Philadelphia, Pa.

Sun Manufacturing Co. 70 Duane st. Ne

## Electric Transmission of Pow

*F.—Transmission électrique de Puiss*

*G.—Electrische Transmission der Kra*

BRUSH ELECTRIC CO. (Parent Co.) 37  
av. Cleveland, O. *see index to advertisers*

ELECTRO DYNAMIC CO. OF I  
DELPHIA, 224 Carter st. Philadelphi  
*see index to advertisers.*

## Electrical Condensers Manufact

*F.—Condensateurs électriques.*

*G.—Electrische Condensatoren.*

BRUSH ELECTRIC CO. (Parent Co.) 37  
av. Cleveland, Ohio. *See index to adre*

FAIRMAN JAMES F. Inventors' I  
Cooper Union, New York. *See index to*  
*tisers.*

MARSHALL, WM. 4 University Bldg  
York.

Pride, Fraleigh & Kyle, 23 & 25 Dey  
York.

## Electrical Contractors and Dea

*F.—*

*G.—Contractoren für Electricität.*

BRUSH ELECTRIC CO. (Parent Co.) 37  
av. Cleveland, O. *see index to advertisers*

FLEISCHMANN A. F. 1226 Chest  
Philadelphia, Pa. *see index to advertisers*

## Electrical Glass Supplies.

*F.—Verreries pour Electricité.*

*G. Glas für electrische Apparate.*

BOSTON & SANDWICH GLASS CO. (C  
Brinkerhoff, agt.) Boston and 17 Mur  
New York, *see index to advertisers.*

DEMUTH BROTHERS, 89 Walker st  
York.

Gleason E. P. Manufacturing Co., Hous  
Mercer sts. New York.

Hibbler & Rausch, Prince & Concord sts.  
lyn, N.Y.

Meriden Flint Glass Works, Meriden, Co  
New Bedford Glass Works, New Bedford,

N. E. Glass Works (W. L. Libby & S  
Federal Works E Cambridge, Boston, 1  
1 P. O. sq. Boston, Mass.

Union Glass Works (Gregory agent), Boston



**Electrical Instrument Makers.**

*F.—Appareils électriques.*  
*G.—Electrische Instrumente.*  
 Oscar G. 162 William st. New York.  
 Electric Brush Co. r, 11 Carlisle build-  
 th st. cor. Walnut st. Cincinnati, O.  
 Electric Co. 30 & 31 Chestnut st. Phila-  
 a, Pa.  
 Galvanic Co. 134 Madison st. Chicago,  
  
 nstein & Co. 300 n. 4th st. St. Louis, Mo.  
 Electric Co. 227 E 20th st. New York.  
 Zahn, 108 Liberty st. New York.  
 s. E., .n.e cor. 22nd st. and 382 2nd av.  
 York.  
 ANN & CO. 292 to 298 av. B. cor. 17th  
 w York, *see index to advertisers.*  
 & Adam, 220 n. 4th st. St. Louis, Mo.  
 & Osborn, 23-25 N. J. R. R. av. Newark,  
  
 CHARLES L. 37 Pearl st. Boston, Mass.  
*see index to advertisers.*  
 ros. 29 Mechanic st. Newark, N.J.  
 N ELECTRIC CO. 550 Washington st.  
 a, Mass. *see index to advertisers.*  
 Electric Co. (E. C. Perkins, agt.) 134  
 inster st. Providence, R.I.  
 J WM. J. Norwalk, O. *see index to*  
*cers.*  
 hn C. 203 W 49th st. New York.  
 fray 63 Fulton st. New York.  
 Linscott, Farmington, Me.  
 mes, 257 & 259 Water st. Brooklyn, N.Y.  
 D. jr. 2008 Chestnut st. Philadelphia, Pa.  
 Carlisle & Co. 180, Friendship st. Pro-  
 e, R.I.  
 Reginald C. 180 Friendship st. Provi-  
 R.I.  
 ELECTRIC CO. (Parent Co.) 379 Euclid  
 and, av. Ohio. *See index to advertisers.*  
 A. & Sons, 76 Frankfort st. Cleveland, O.  
 J. H. & Co. 112 Liberty st. New York.  
 William H. 259 W 27th st. New York.  
 lard Rubber Co. 33 Mercer st. New York.  
 l-Payson Battery Co. 2 Chestnut st. Phila-  
 a, Pa.  
 ia Electric Gas Lighting Co. 22 Kearny  
 n Francisco, Cal.  
 ia Electric Light Co. 220 to 226 Jessie  
 n Francisco, Cal.  
 ia Electrical Works, 134 Sutter st. San  
 isco, Cal.  
 Pennsylvania Telephone Supply Co.  
 amsport, Pa.  
 Electric Belt Co. 123 Washington st.  
 go, Ills.  
 Electric Manufacturing Co. 4 Rush st.  
 go, Ills. and 88 East Lake st. New York.  
 Telegraph Supply Co. cor. of Washington  
 larket sts. Chicago, Ills.  
 . F. 181 Broadway, New York.  
 uis W. 91 W'tminster st. Providence, R.I.  
 nd Electrical Manufacturing Co. 91 West-  
 er st. Providence, R.I.

**Electrical Instrument Makers—continued.**  
 Cornish T. E. 1111 Chesnut st. Philadelphia, Pa.  
 Cram J. S. 1205 Arch st. Philadelphia, Pa.  
 CUMMING & BRINKERHOFF, 219 E. 18th  
 st, New York, *see index to advertisers.*  
 Dakin E. A. 219 Sansom st. San Francisco, Cal.  
 Detroit Electrical Works, Detroit, Mich. & Boston,  
 Mass.  
 Dowden Geo. A. 841 Broadway, New York.  
 Dye Battery & Pad Co. 33 Bromfield st. Boston,  
 Mass.  
 Eastern Electric Mfg. Co. 115 Broadway, New  
 York.  
 Eaton Mrs. E. A. 111 Adams st. Chicago, Ills.  
 Edison Electric Tube Co. 255 Pearl st. New York.  
 Edison T. A. Menlo Park, N.J.  
 Edwards & Co. 41 Beaver st. New York.  
 Electric Magnetic Belt Co. 25 Winter st. Boston,  
 Mass.  
 Electric Mfg. Co. 1020 Arch st. Philadelphia. Pa.  
 Electric Patrol Indicator Co. 35 Broadway, New  
 York.  
 Elec. Signal & Time Register Co. 32 Park pl.  
 New York.  
 Electric Tube Co. 65 Washington. st. New York.  
 ELECTRICAL SUPPLY CO. Ansonia, Conn.  
 & 17 Dey st. New York, *see index to advertisers.*  
 ELECTRO DYNAMIC CO. OF PHILA-  
 DELPHIA, 224, Carter st. Philadelphia, Pa.  
*see index to advertisers.*  
 Electro Medical Mfg. Co. 157 E 81st, New York.  
 ELGIN TELEPHONE CO. (Wm. Hubbard,  
 patentee), ELGIN (Kane Co.) ILLS. Elgin  
 Telephone for private lines, &c.  
 FAIRMAN JAMES F. Inventors' Institute,  
 Cooper Union, New York. *See index to adver-*  
*tisers.*  
 Fernald G. M. D. 12 Brattle st. Boston, Mass.  
 Ferrin Wm. F. 186 Devonshire st. Boston, Mass.  
 Finn Lightning Arrestor Co. Elysia, Ohio.  
 Fitch Frederick K. 40 Cortlandt st. New York.  
 FIX & HERMAN, 169, Fulton st. New York.  
 FLEISCHMANN A. F. 1226 Chestnut st. Phila-  
 delphia, Pa. *see index to advertisers.*  
 Flemming O. 1009 arch st. Philadelphia, Pa.  
 Folken J. H. & Bros. 118 Montgomery st. San  
 Francisco, Cal.  
 Foote A. R, S. 528 20th st. Washington, D.C.  
 Frank F. S. 167½ Wood st. Pittsburgh, Pa.  
 Freeman Bros. 37 Centre st. New York.  
 Fricke J. R. & Co. 150 Anderson st. Pittsburgh,  
 Pa.  
 Fuller Electrical Co. 44 14th st. New York.  
 Fuller F. W. 419 Sacramento st. San Francisco,  
 Cal.  
 Fuller Seth W. 22 Milk st. Boston, Mass.  
 Galvano Faradic Mfg. Co. 335 4th av. New York.  
 Garratt Electric Disc & Belt Co. 8 Hamilton pl.  
 Boston, Mass.  
 Garrett George S. 3130 Chestnut st. Phila. Pa.  
 Glass J. 1413 Chesnut st. Philadelphia, Pa.  
 Greenwood Pottery Co. Trenton, N.J.  
 Griffin John L. 265 Broadway, New York.  
 Guch J. C. 18 Market st. San Francisco, Cal.

## Electrical Instrument Makers—continued.

Guerant George M. 41 Centre st. New York.  
 Hall E. K. & Co. 163 Albany st. Boston, Mass.  
 Hall T. 19 Bromfield st. Boston, Mass.  
 Hampton Bros. 607 Mission st. San Francisco, Cal.  
 Hanson Van Winkle & Co. 92 and 94, Liberty st.  
 New York and Newark, N.J.  
 Harris A. C. & Co. Louisville, Ky.  
 Harbert Edw. E. & Co. 159 La Salle st. Chicago,  
 Ills.  
 Hatteroth & Russ, 321 Kearney st. San Francisco,  
 Cal.  
 Hazazer Edgar W. 33 Murray st. New York.  
 Hempler H. H. 453 Pennsylvania av. Washn. D.C.  
 Heylmann C. J. 298 Wt. Lake st. Chicago, Ills.  
 Hinds Chas. H. (gas lighting by electricity), 418  
 W. 27th st. New York.  
 Hoerack Paul, 193 Worth st. New York.  
 HOLTZER, C. W. Brookline, Mass. *see index to*  
*advertisers.*  
 Hudson J. & W. 697 Broadway, New York.  
 Irsch Francis, 204 E. 23rd st. New York.  
 Jack J. C. 18 Market st. San Francisco, Cal.  
 JONES C. E. & BRO. Carlisle bldgs. 51 W.  
 4th st. Cincinnati, O.  
 Kahl A. & Co. 13 Mercer st. Baltimore, Md.  
 Keim John H. 192 Broadway, New York.  
 KIDDER JEROME MANUFACTURING CO.  
 820 Broadway, New York, *see index to adver-*  
*tisers.*  
 KINSMAN F. E. & CO. 145 Broadway & 86  
 Liberty, st. New York.  
 Kirkhoff Wm. A. 30 S 12th st. Philadelphia, Pa.  
 Lannert J. A. 31 Prospect st. Cleveland, O.  
 Lazell J. L. & Co. 48 Centre st. New York.  
 LECLANCHÉ BATTERY CO. 149 W. 18th st.  
 New York, *see index to advertisers.*  
 Leuschner E. 189 Vine st. Cincinnati, O.  
 Lockwood & Foster. electrical instrument manu-  
 facturers, 21, Park row, New York.  
 LONGSTREET JOHN H. 9 Barclay st. New  
 York, *see index to advertisers.*  
 Low A. S. 259 W Madison st. Chicago, Ills.  
 Lundbeg & Dilg, Oregon Electrical Works, Port-  
 land, Oregon.  
 Lyman A. B. & Co. 36 No. Water st. Cleveland, O.  
 McCabe J. H. & Co. 1783 Broadway & 304 W  
 41st st. New York.  
 McIntosh Galvanic & Faradic Battery Co. 192-  
 194 Jackson st. Chicago, Ills.  
 Mathews D. S. D. & Co. 84 5th av. Chicago, Ills.  
 Maxim Electric Light & Power Co. 617 Arch st.  
 Philadelphia, Pa.  
 Maynard G. C. 1413 G st. Washington, D.C.  
 Meigs & Aberrill, 218 State st. Chicago, Ills.  
 Meyer Curt W. 11 Dey st. New York.  
 Michigan Carbon Works, Detroit, Mich.  
 Morey L. G. 1413 Chestnut st. Philadelphia, Pa.  
 N. Y. Dynamo Electric Manufacturing Co. 907  
 Broadway, New York.  
 N. E. Weston Electric Light Co. 267 Washington  
 st. Boston, Mass.  
 New York Wood Turning Co. 134th st. n. 3rd  
 av. New York.

## Electrical Instrument Makers—

North-Western Electric Gas Lighting  
 Clark st, Chicago, Ills.  
 Novelty Electric Co. 502 Locust st. G.  
 5th st. Philadelphia, Pa.  
 Partrick & Carter, 114 South 2nd st. Phila  
 Pa.  
 Patterson H. T. & Co (Supplies), 138 G  
 New York.  
 Patterson John M. 91 Grant st. Pittsburg  
 Pearce & Jones, 79 John st, New York.  
 Petersen Alma Miss, 155 22nd st. Chicag  
 Pickett Margaret, 415 W. Washn. st. Chic  
 Pinkham C. S. & Co. 432 Walnut st. Phila  
 Pa.  
 PINKHAM & SEAL, 38 Hudson st. P  
 phia, Pa., *see index to advertisers.*  
 Pool A. A. & Co. 55 N. J. R. R. av. Newar  
 Post & Co. Cincinnati, O.  
 Pride, Fraleigh & Kyle, 23 Dey st. New  
 Pulvermacher Galvanic Co. (belts), 167 I  
 Cincinnati, O.  
 Railway Car Elec. Sig. Co. 71 B'way, Ne  
 Rauda Otto, 194 Fulton st. New York.  
 RAYNOR HM, M. (platinum foil & )  
 Bond st. New York, *see index to advertis*  
 Reitz C. & Sncan E. J. Indianapolis, Ind  
 Richardson A. M. & Co. 104 W. 42nd  
 York.  
 Reihl & Hasse, Race, cor. Longworth st. Cin  
 ROUSSEAU D. 4th av. n. 13th st. Ne  
 office 181 B'way, bet. Cortlandt & Dey  
 York.  
 Royce & Marean 1408 Penn. av. Washing  
 Runkel Henry E. 21 E. 15th st. New Yo  
 Scheffer G. A. Evansville, Ind.  
 SCHOOLEY W. D. Richmond, Ind.  
 Scott C. W. Louisville, Ky.  
 Sharp C. C. Indianapolis, Ind.  
 Shiras J. O. 13 W. 4th st. Cincinnati, O.  
 Smith & Rhodes, Elec. Co. Ld. 37 Barclay  
 York.  
 Smith T. J. 81 3rd st. Brooklyn, E.D. N  
 Smoltz Wm. 420 Montgomery st. San Fr  
 Cal.  
 Snean E. Indianapolis, Ind.  
 Spencer & Crocker, 117 to 121 W.  
 Cincinnati, O.  
 Stammers H. E. 1430 Broadway, New Yo  
 STANDARD ELECTRICAL WORKS  
 cincinnati, O., *see index to advertisers.*  
 Stearns & George, 29 Pearl St. Boston, M  
 Stendel R. A. 117 Clark st. Chicago, Ills.  
 Stendell Rd. A. 30 & 150 Dearborn st C  
 Ills.  
 Telegraph Supply Co. 71 Ontario st. Clev  
 Terry W. H. Camden, N.J.  
 Thau Henry, 130 Fulton st. New York.  
 THE CHAS. WILLIAMS JR. BRANC  
 THE WESTERN ELECTRIC CO.  
 115 Court st. Boston, Mass., *see*  
*advertisers.*  
 Thomson-Houston Electric Light Co. 313  
 nut st. Philadelphia, Pa.

## TERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

### al Instrument Makers—continued.

SON L. G. & CO. 5 & 7 Dey st.; fac-  
39, 141 & 143 Centre st. New York, *see*  
*advertisers.*

ELECTRIC MANUFACTURING CO.  
1 st. & 145 Broadway, New York, *see*  
*advertisers.*

e Mrs. S. L. 91 Washington st. Chicago,

poole Electric Light Co. 203-205 Van  
st. Chicago, Ills.

E. W. 195 Broadway, New York.

& Co. 14 Jackson st. Chicago, Ills.

Emil. W. 36 John st. New York.

Ferd. W. 206 Race st. Cincinnati, O.

Bartlett 204 E. 23rd st. New York.

J. O. 88 Lake st. Chicago, Ills.

J. W. jr. 192 W. 5th st. Cincinnati, O.

Em. 109 E. 13th st. New York.

ERN ELECTRIC CO. 220 Kinzie st.  
go, Ills. 63 New Church st. New York and  
apolis, Ind., *see index to advertisers.*

E. 238 Washington st. Newark, N.J.

Edward, 23 Plane st. Newark, N.J.

Eldon, 144 La Salle st. Chicago, Ills.

Finck, 769 Market st. San Francisco, Cal.

& Co. 134 Madison st. Chicago, Ills.

er E. 187 Vine st. Cincinnati, O.

### Electrical Schools.

F. -

G.—*Schulen der Electricität.*

a College School of Mines, 47th st. 4th av.  
York (scientific course).

Univ. Ithaca, N.Y. (elec. engineering).

School of Science (scific. course) Princess-  
N.J.

l Univ. (scific. course) Cambridge, Mass.

echul. Inst. of Elec. Engineering, Boston,

' Inst. of Technology, Hoboken, N.J.

m's Business & Telegraphic College, 4th  
pposite the Cooper Union, New York.

Telegraph Instruction Co. 3 Park row,  
York: branch office in Brooklyn, N.Y.

n School of Telegraphy, Janesville, Wis.  
ollege (scific. course) New Haven, Conn.

### Electrical Sundries—Manufacturers.

F.—*Appareils divers électriques.*

—*Verfertiger von Electriche Artikeln.*

H ELECTRIC CO. (Parent Co.) 379  
id av. Cleveland, Ohio, *see index to*  
*tiers.*

MAN JAS. F. Inventors' Institute, Cooper  
m, New York, *see index to advertisers.*

y Wm. L. Schaefer, 144 Chambers st New  
r.

ZER CHARLES W. Brookline, Mass.  
*index to advertisers.*

OLEY W. D. Richmond, Ind.

t Augustus 64 Broadway, Providence, R.I.  
at cable clip).

### Electrical Supplies.

F.—*Appareils Electriques.*

G. —*Lieferanten in electrischen Artikeln.*

Ahlstrom O. G. 162 William st New York.

American Electric Co. New Britain, Conn.

Ann. Elec. Mfg. Co. 90 Lake st. Chicago, Ills.

Bahr & Zahn, 108 Liberty st. New York.

Baker J. 333 Washington st. Boston, Mass.

Ball Clinton M. Troy, N.Y.

Bailey Theo. P. 203 Van Buren st. Chicago, Ills.

Banks Wm. H. 203 & 205 Van Buren st. Chi-  
cago, Ills.

BLY CHARLES L. 37 Pearl st. Boston, Mass.  
*see index to advertisers.*

Bonwill Wm. G. A. 1721 Locust st, Philadel-  
phia, Pa.

Boston Electric Protective Association, r. 7,  
56 Summer st Boston, Mass.

BOSTON ELECTRIC CO. 550 Washington st.  
Boston, Mass., *see index to advertisers.*

Bowen Wm J. Norwalk, Ohio.

BRUSH ELECTRIC CO. (Parent Co.) 379  
Euclid av. Cleveland, O., *see index to advertisers.*

Bunnell J. H. & Co 112 Liberty st, New York.

BUTLER HARD RUBBER CO. 33 Mercer st.  
New York, *see index to advertisers.*

COURTENAY & TRULL (*Gelatinized Fibre*),  
15, Dey st. New York, *see index to advertisers.*

CUMMING & BRINKERHOFF, 219 E. 18th  
st. New York, *see index to advertisers.*

Davis & Watts, Baltimore, Md

Dey C. E. & Co. 312 17th st. Denver, Col.

Dodson Wilson P. Philadelphia, Pa.

Dolbear A. Emmerson, Somerville st. Mass.

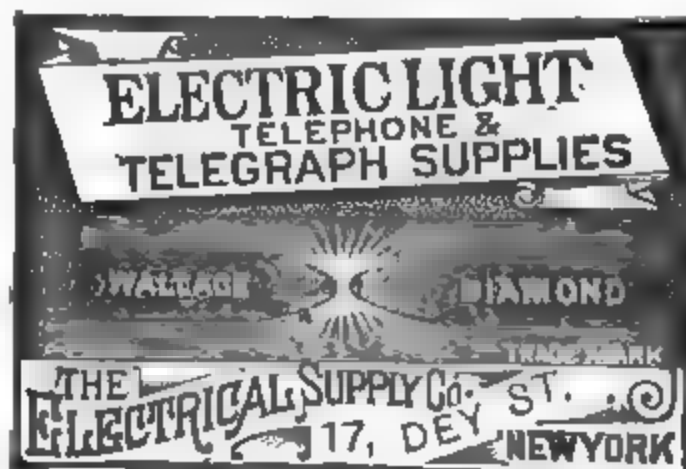
Douglas F. A. over 28 Main st. Lockport N.Y.

Dreyfus Louis G. 45 West 13th st. New York.

Edison Electric Light Co. 65 5th av New York.

Ego Alex H Mechanicsburg, Pa.

Eldridge J. Morgan, Philadelphia, Pa.



Electric Purifier Co. New Haven, Conn.

Electric Tube Co 65 Washington st New York.

ELECTRO-DYNAMIC CO. OF PHILADEL-  
PHIA, 224 Carter st. Philadelphia, Pa., *see*  
*index to advertisers.*

Electro-Graphic Co. 2 Dutch st New York.

FAIRMAN JAS F. Inventors' Inst. Cooper U.  
New York, *see index to adve tisers.*

Ferrie Odyline Manufacturing Co. 227 Washing-  
ton and 171 Tremont st Boston, Mass.

FLEISCHMANN A. F. 1226 Chestnut st. Phila-  
delphia, Pa., *see index to advertisers.*

## Electrical Supplies—continued.

Goodrich & Moore, 180 Main st. Buffalo, N.Y.  
HARBERT EDW. E. & SON, 159 La Salle st.  
Chicago, Ills.  
Hasse Robert, Indianapolis, Ind.  
Hill & Jordan, Columbus, Ga.  
Hirsh Joseph M. Chicago, Ills.  
Hubbard Charles W. Boston, Mass.  
JONES C. E. & BRO. 51 W. 4th st. Cincinnati,  
O.  
KINSMAN F. E. & CO. 145 Broadway & 86  
Liberty st. New York.  
LECLANCHE BATTERY CO. 145 W. 18th st.  
New York, *see index to advertisers.*  
MONTGOMERY & CO. 105 Fulton st. New  
York, *see index to advertisers.*  
Mason Volney W. & Co. Providence, R.I.  
N.Y. Electric Light Association, 23 Dey st. New  
York.  
PARTRICK & CARTER, 114 S. 2nd st. Phila-  
delphia, Pa.  
Partz August, Philadelphia, Pa.  
Patterson H. T. & Co. 138 Centre st. New York.  
Philips William J. 2030 Delancy pl. Philadelphia,  
Pa.  
Place George G. 141 Devonshire st. Boston, Mass.  
Plume & Atwood Manufacturing Co. 13 Federal  
st. Boston, Mass.  
Portable Electric Light Co. 79 Water st. Boston,  
Mass.  
Post & Co. Cincinnati, O.  
Rauda Otto, 194 Fulton st. New York.  
REDDING JEROME & Co. 30 Hanover st.  
Boston, Mass., *see index to advertisers.*  
Ritchie E. S. & Sons, 87 Franklin st. Boston,  
Mass.  
ROYCE & MAREAN, 1408 Penn. av. Washing-  
ton, D.C.  
Rubber Comb & Jewellery Co. 33 Mercer st.  
New York.  
SCHOOLEY W. D. Richmond, Ind.  
Smith T. J. 81 3rd st. Brooklyn E.D. N.Y.  
Standard Electric Light Co. 211 Centre st. New  
York.  
STANDARD ELECTRICAL WORKS, Cincin-  
nati, O., *see index to advertisers.*  
THE CHAS. WILLIAMS JR. BRANCH OF  
THE WESTERN ELECTRIC CO. 109 & 115  
Court st. Boston, Mass., *see index to advertisers.*  
TILLOTSON L. G. & CO. 587 Dey st. New  
York; factory, 139, 111 & 143 Centre st.  
New York, *see index to advertisers.*  
UNION ELECTRIC MANUFACTURING CO.  
7 & 9 Bond st. New York, *see index to advertisers.*  
U. S. Electric Lighting Co. 120 B'way, New  
York.  
WESTERN ELECTRIC CO. Chicago, New  
York, Indianapolis and Boston, *see index to  
advertisers.*  
Weston Electric Light Co. Newark, N.J.  
White House Mills, Hoosac, N.Y.  
Wilsonia Magnetic Appliances Co. (S. W. Russell,  
agent), 14 Winter st. Boston, Mass.

## Electrical Supplies—continued.

WOLFE L. W. & CO., electricians, and  
in electric hotel and house annunci-  
nato - electric machines, electro -  
engines, medical batteries, electric bell  
lar alarms, electric gas lighters, &  
supplies, insulated wire, carbon  
battery plates, &c, 206 N. 16th st.  
blk. Omaha, Neb.

## Electrical Testing Instrument M

*F.—Appareils d'essai électriques.*

*G.—Probirinstrumente für Electricität*

BRUSH ELECTRIC CO. (Parent C  
Euclid av. Cleveland, O., *see index to ad*  
ELECTRICAL SUPPLY CO. 17 Dey  
York and Ansonia, Conn., *see index t*  
*tisers.*

FAIRMAN JAMES F. Inventors' I  
Cooper's Union, New York, *see index t*  
*tisers.*

HOLTZER CHAS. W. Brookline, Ma  
*index to advertisers.*

WESTERN ELECTRIC CO. New York  
cago, Indianapolis & Boston, *see index  
vertisers.*

## Electricians.

*See list of Members New York and London E  
Societies.*

*F.—Electriciens.*

*G.—Electricitäts-Kundige.*

Abernothy J. P. Supt. Tel. Cleveland, O.  
Agnew T. J. Philadelphia, Pa.  
Airey A. L. Cleveland, O.  
Allen L. M. Duxbury, Mass.  
Allison Wm. C. Philadelphia, Pa.  
Amet E. H. La Grange, Ills.  
Anders G. L. Boston, Mass.  
Andrews C. N. San Francisco, Cal.  
Anson E. M. 195 Broadway, New York.  
Archibald L. B. Supt. Government R  
Charlottetown, Prince Edward's Island.  
Arnold J. G. Worcester, Mass.  
Athern W. E. American Rapid Telegra  
187 Broadway, New York.  
Atterbury J. R. Pittsburgh, Pa.  
Avery Dr. Elroy M. electrician and expert  
Electric Assn. 404 Market st. St. Louis  
Baader & Weber, 242 Broome st. New Yo  
Bain Forée, 721 Hennepin av. Minneapolis.  
Baker G. E. 195 Broadway, New York.  
Baker J. N. electrician & expert Brush E  
Light Co. Topeka, Kansas.  
Baldwin A. A. Ionia, Mich.  
Ball C. E., N. E. cor. 22nd st and 2nd av  
York.  
Ball C. M. Troy, N.Y.  
Ballou G. F. New York.  
Banta W. E. Springfield, O.



## ians—continued.

E. T. 49 Broadway, New York.  
 eo. F. University pl. Philadelphia, Pa.  
 . L. 107 State st. Boston, Mass.  
 ' C. 336 W 56th st. New York.  
 E. S. Pittsburgh, Pa.  
 H. (assist.-gen. manager W. U. Tel.  
 \* York) 195 Broadway, New York.  
 G. W. 314 Green av. Brooklyn, N.Y.  
 . Medina, N.Y.  
 I. Newark, N.J.  
 . Miles City, Montana.  
 inneapolis, Minn.  
 J. B. New York.  
 . Boston, Mass.  
 A. Boston, Mass.  
 Cable Français, St. Pierre et Miquelon  
 H. Cleveland, Ohio.  
 Edward, 195, Broadway, New York.  
 I. Pittsfield, Mass.  
 I. (Edison Co.) Chicago, Ills.  
 H. Griggsville, Ills.  
 S. 195 Broadway, New York.  
 Vm. F. Superior, Neb.  
 . Fall River, Mass.  
 ugust, 7 Frankfort st. New York.  
 M. Western Electric Co. Chicago, Ills.  
 m. J. Norwalk, O.  
 . E. Fitchburg, Mass.  
 . T. New York.  
 . L. 518 Broadway, New York.  
 Dr. F. 122 East 22nd st. New York.  
 San Francisco, Cal.  
 idge H. W. Providence, R.I.  
 Thomas 195 Broadway, New York.  
 Jos. T. 1300 5th st. Washington, D.C.  
 . B. Sacramento, Cal.  
 . J. (manager Leclanché Battery Co.)  
 18th st. New York.  
 195 Broadway, New York.  
 n A. Astoria, N.Y.  
 RHOFF C.M. 219 E 18th st. New York.  
 y Charles W. (electrician and expert  
 sta Brush Elec. Co.) Minneapolis, Minn.  
 vid jr. 2008 Chestnut st. Philadelphia,  
 . J. 195 Broadway, New York.  
 S. (gen. supt. Mutual Union Tel. Co.)  
 adway, New York.  
 D. (electrician and expert Shanghai  
 lectric Co.) Shanghai, China.  
 al. P. (electrician and expert Brush  
 88 Market st. Chicago, Ills.  
 W. Augusta, Georgia.  
 . F. Cleveland, O.  
 . 70 Washington st. Boston, Mass.  
 am C. L. Elizabeth, N.J.  
 les E. Washington, D.C.  
 Y C. S. San Francisco, Cal.  
 anz, Washington, D.C.  
 H. Plainfield, N.J.  
 H. G. 237 W 4th st. New York.  
 . B. 1009 Market and 494 St. John sts.  
 phia, Pa.

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 C. 53 Maiden lane, New York.  
 Dean L. J. B. & Co. 75 Nassau st. New York.  
 Dean R. A. 50 Ann st. New York.  
 E. 48 Centre st. New York.  
 Nickel Co. Norwich, Conn.  
 J. R. 12 Calhoun pl. Chicago, Ills.  
 & Co. 88 John st. New York.  
 D. B. 638 Market st. San Francisco, Cal.  
 J. 120 Exchange st. Philadelphia, Pa.  
 Brockmann, 261 Randolph, Chicago, Ills.  
 G. W. Kalamazoo, Mich.  
 H. Columbus, O.  
 Gold & Silver Plating Wks. Oneida, N.Y.  
 I. 346 6th av. New York.  
 S. & Co. 109 E. 13th st. New York.  
 Mfg. Co. 20 Maiden lane New York & Bedford, Mass.  
 Bachelder & Co. 394 Washington st. Boston, Mass.  
 J. & Jacherri, 8 Golden Gate ave. San Francisco, Cal.  
 J. A. 652 Mission st. San Francisco, Cal.  
 Phillippe & Co, Syracuse, N.Y.  
 J. Rome, N.Y.  
 M. Portland, Me.  
 A. Nashua, N.H.  
 J. New Haven, Conn.  
 F. L. & H. C. Hartford, Conn.  
 Ros. & Co. 717 S 6th st. St. Louis, Mo.  
 J. 775 Broadway, New York.  
 C. G. 209 Centre st. New York.  
 Aluminium & Nickel Works Amber and Co. Philadelphia, Pa.  
 Plating Works, Peoria, Ills.  
 E. Collis, 6 Calham pl. Chicago, Ills.  
 C. Miller, 120 Sutter st. San Francisco, Cal.  
 Philadelphia Nickel Plating Wks. 1528 Frankfort Philadelphia, Pa.  
 V. H. & L. E. Hartford, Conn.  
 High Plate Co. 139 2nd av. Pittsburgh, Pa.  
 A. A. 555 8th av. New York.  
 Mutz, 45 Ann st. New York.  
 J. M. Rutland, Vt.  
 J. Utica, N.Y.  
 Wm. & Co. 247 W 5th st. Cincinnati, O.  
 & Moreland, Wilmington, Del.  
 Co. 52 Terrace st. Buffalo, N.Y.  
 E. 243-245 Arch st. Philadelphia, Pa.  
 & Appleton, 304 Washington st. Boston, Mass.  
 C. Hanman, 64-66 S Canal st. Chicago, Ills.  
 W. V. Rahway, N.J.  
 City Nickel Plating Works, 101 W 5th Cincinnati, O.  
 M. 80 State st. Rochester, N.Y.  
 H. & Co. 110 Montgomery st. San Francisco, Cal.  
 E. D. 50 Sudbury st. Boston., Mass.  
 F. Allentown, Pa.

## Electro-Platers—continued.

Ranter J. 205 Elm st. New York.  
 Reddick T. Waltham, Mass.  
 Reed & Barton, 686 Broadway, New York.  
 Regney P. 665 Mission st. San Francisco, Cal.  
 Reid & Bros. Reading, Pa.  
 Reynolds E. H. & Co. 107 Dorrance st. Providence, R.I.  
 Reynolds M. 1375 Broadway, New York.  
 Reynolds J. Peekskill, N.Y.  
 Rhode Island Nickel Plating Works, 28½ Potter st. Providence, R.I.  
 Richards J. L. Springfield, Mass.  
 Richmond & Cherry, 53 Ann st. New York.  
 Riley & Lynch, 17 Mulberry st. Newark, N.J.  
 Ristine C. 114 N 2nd st. Philadelphia, Pa.  
 Robbins J. P. & Co. 3rd cor. Race st. Phila. Pa.  
 Roberts E. M. & Son, Hartford, Conn.  
 Roberts & Havell, 284 Washn. st. Newark, N.J.  
 Robinson J. W. 11 Ann st. New York.  
 Robinson W. L. Worcester, Mass.  
 Rochicioli R. F. 8 Tyler st. San Francisco, Cal.  
 Roehring F. W. 46 or 248 Plymouth st. Brooklyn, N.Y.  
 Rogers & Brittin Silver Co. Bridgeport, Conn.  
 Rogers & Brother, 690 Broadway, New York.  
 Rogers & Co. 62 Canal st. Boston, Mass.  
 Rogers Cutlery Co. Hartford, Conn.  
 Rogers, Smith & Co. Meriden, Conn.  
 Rogers & Spurr Mfg. Co. Greenfield, Mass.  
 Rogers Wm. Mfg. Co. Hartford, Conn.  
 Rogers R. M. Union City, Pa.  
 Root & Burrows, 1237 Peach st. Erie, Pa.  
 Rose E. F. Dighton, Mass.  
 Rubenstein Bros. 537 Craig st. Montreal.  
 Rudeger A. & Co. 26 & 261 Randolph st. Chicago, Ill.  
 Rudgear & Parr, 23 Stevenson st. San Francisco, Cal.  
 Russell A. Wilton, Me.  
 Russell S. H. 8 Province st. Boston, Mass.  
 St. Louis Nickel Pltg. Wks. 115 Morgan st. St. Louis, Mo.  
 Sample W. H. Albany, N.Y.  
 Sargeant Mfg. Co. 79 Summit st. Newark, N.J.  
 Sargent Fred. H. New Bedford, Mass.  
 Sauer A. & Co. 1665 Story av. Louisville, Ky.  
 Sause E. J. 90 Fulton st. New York.  
 Sauter Wm. 268 W Pratt st. Baltimore, Md.  
 Saville B. 209 N 3rd st. St. Louis, Mo.  
 Sawkins F. A. 54½ W Fayette st. Baltimore, Md.  
 Schade Henry, 84 John st. New York.  
 Schaezlin R. 13 Trinity st. San Francisco, Cal.  
 Schandain J. W. 114 S 2nd st. Philadelphia, Pa.  
 Scheerer & Diehr, 237 N 4th st. Philadelphia, Pa.  
 Schenck C. & Co. Ansonia, Conn.  
 Schild J. S. Fort Wayne, Ind.  
 Schnuck & Co. Derby, Conn.  
 Schoonmaker D. 49 Taylor st. Springfield, Mass.  
 Schulze L. & Son 104 N 6th st. Philadelphia, Pa.  
 Scott & Ward, Indianapolis, Ind.  
 Seaman W. H. Greenfield, Mass.  
 Searl J. 25 N 13th st. Philadelphia, Pa.  
 Sheffield Cutlery Concern, State cor. Washington st. Boston, Mass.

## Electro-Platers—continued.

Shepman W. E. 41 Geary st. San Francisco, Cal.  
 Shreeve G. C. & Co. 110 Montgomery st. San Francisco, Cal.  
 Show A. W. & Co. Indianapolis, Ind.  
 Simpson, Hall, Miller & Co. Wallingford, Conn.  
 Sloper H. M. East bldgs. Berlin, Conn.  
 Sly W. Cleveland, O.  
 Smith W. & Bros. 619 Callowhill st. Phila. Pa.  
 Smith & Walker, Concord, N.H.  
 Smith A. 662 6th av. New York.  
 Smith G. B. 609 N 7th st. St. Louis, Mo.  
 Smith J. T. ft. Platt st. Rochester, N.Y.  
 Smith J. R. Waltham, Mass.  
 Snow A. W. & Co. Indianapolis, Ind.  
 Snyder F. H. 911 Vine st. Philadelphia, Pa.  
 Spink S. P. & Sons, 7 4th st. San Francisco, Cal.  
 Standard Silver Ware Co. 17 Battery-march st. Boston, Mass.  
 Stanley & Son, Troy, N.Y.  
 Starr W. L. & Co. 44 Lawrence st. Newark, N.J.  
 Steadman W. H. North Adams, Mass.  
 Steane, Son & Hall, 36 Gold st. New York.  
 Stecher & Baumgarten, 460 Dillwyn st. Phil. Pa.  
 Stephenson G. W. 210 Grand st. New York.  
 Stewart & Jones, 54 N 6th st. Philadelphia, Pa.  
 Stockwell C. H. 11 S 9th st. Philadelphia, Pa.  
 Stolpe E. 609 7th st. Washington, D.C.  
 Straus, Kohnstamm & Co. Battery cor. Pine st. San Francisco, Cal.  
 Streeter James, 8 E Main st. Rochester, N.Y.  
 Strickland R. & Co. Albany, N.Y.  
 Strong Manufacturing Co. Winstead, Conn.  
 Stuart & Banker, Bangor, Me.  
 Sturdy G. H. & Co. 209 Pine st. Prov. R.I.  
 Sturdy J. E. 190 Eddy st. Providence, R.I.  
 Sutterly Jones & Stewart, Limited, 54 N 6th st. Philadelphia, Pa.  
 Taunton Nickel Pltg. Co. (N.D.) Dighton, Mass, and Taunton, Mass.  
 Texter H. Louisville, Ky.  
 Thomson, H. A. 201 Kearny st. San Francisco, Cal.  
 Tierney John, Portland, Me.  
 Tillman J. & Hausgen E. 213 Grand st. New York.  
 Tilmay J. Portland, Me.  
 Titcomb A. C. & Co. 24 Post st. San Francisco, Cal.  
 Titus & Walker, Amesbury, Mass.  
 Tonkin Wm. 629 Filbert st. Philadelphia, Pa.  
 Toothill J. 79 Adam st. Brooklyn, N.Y.  
 Tuft J. F. 132 Clark st, Chicago, Ills.  
 Turner E. S. & Co. 4 N. La Salle, st. Chicago, Ills.  
 Turner & Kaupp, 383 Washington st. Boston, Mass.  
 Tweed Henry R. 382 2nd av. New York.  
 Turtchell W. Syracuse, N.Y.  
 Union Nickel Pltg. Works, 129-131 Dorrance st, Providence, R.I. and 39 Taylor st. Springfield, Mass.  
 Union Pltg. Wks. 259 Randolph st. Chicago, Ills.  
 Unrah Jos. B. Manchester, N.H.

## Electro-Platers—continued.

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 Valley S.P. works, 305 N. 7th st. St. La  
 Van Doorn C. A. & Co. Greenfield, Mass  
 Van Housen C. & Co. Albany, N.Y.  
 Van Volkenburg D. Utica, N.Y.  
 Vennerbeck & Chase, 107 Friendship st. Pr R.I.  
 Wadsworth E. M. & Co. St. Louis, Mo.  
 Waldron J. V. & Bro. 40 Sudbury st. Mass.  
 Walker F. P. r. 627 Arch st. Philadelphia  
 Walker J. 40 Franklin st. Newark, N.J.  
 Walker Wm. 64 Fulton st. New York.  
 Wardell O. Detroit, Mich.  
 Warner William A. Syracuse, N.Y.  
 Warren & Ward, Bridgeport, Conn.  
 Warren E. Bridgeport, Conn.  
 Webster E. G. & Bro. 243 Fulton st. B N.Y. and 14 Maiden la. New York.  
 Welley & Hotchkiss, 47 Ann st. New Yo  
 Welling C. G. 88 John st. New York.  
 Wenzel Adolph C. 114 Centre st. New Y  
 West Haven Plating Co. Orange, Conn.  
 West Mal. Nickel Co. 45 William st. New  
 Westfield Plating Co. Westfield, Mass.  
 White Water Silver Plating. Co. Conn Ind.  
 Whitehand R. A. 804 D st. Washington  
 Wight A. M. Augusta, Me.  
 Wilcox Silver Plate Co. 6 Maiden la. Ne and Meriden, Conn.  
 Wild J. 15 S. 10th st. St. Louis, Mo.  
 Wilkinson, F. R. 49 Maiden la. New Yo  
 Williams Bros. Mfg. Co. (Naubuc) Glas Conn.  
 Winsted Silver Plate Co. (Wt. W.) Winst  
 Withers G. B. 14 James st. St. Louis, M  
 Wolferty, Fred. H. 95 Elizabeth st. New  
 Worcester Plating Co. Worcester, Mass.  
 Wright Wm. & Co. 62 Hamilton st. New  
 Wright W. H. Erie, Pa.  
 Wuterich F. J. cor. White & Elm sts. Ne  
 Yale C. B. & G. S. 36 E. 14th st. New Y  
 Yates & Ely, 136 st. & 3rd av. New York  
 Yocum T. 602 Cherry st. Philadelphia, I  
 Young & Dimworth, 301 E. 22nd st. New  
 Young M. & Co. 131 Dorrance st. Providen  
 Young D. R. 208 N. 10th st. Philadelphia  
 Zante D. 190 Jessie st. San Francisco, C  
 Zettner & Wright, St. Joseph, Mo.  
 Zucker & Levett Chemical Co. 540, 542, 546 W. 16th st. New York.

## Electrolier Manufacturers.

*F.—Electroliers (Fab. d').*

*G.—Candelaber für Electriche Lamp*

Almy H. S. & Co. 42 Park pl. New York  
 Automatic Gas Lamp & Ltg. Co. 89 C New York.  
 Becker Henry, 190 Orchard st. New York



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n Siegmund, 86 Fulton st. New York.  
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 rk, *see index to advertisers.*  
 Barnett, 40 Murray st. New York.  
 Ebenezer, 93 Maiden la. New York.  
 mile V. 109 Wooster st. New York.  
 : Lacy, 52 Park pl. New York.  
 Hubbard Mfg. Co. 21 Barclay st. & 26  
 New York, & Meriden, Conn.  
 ass & Clock Co. 32 Warren st. New  
 Forrestville, Conn.  
 o. W. 32 Warren st. New York.  
 . & Sons, 151 Chambers st. New York.  
 h C. 60 Duane st. New York.  
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 le J. 136 E. 13th & 37 E. 18th st.  
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 Wellington Mfg. Co. 496 Cherry st.  
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 . F. & Co. 822 Broadway, New York.  
 d. & Co. 44 Park pl. New York.  
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 & Co. 36 Barclay st. New York.  
 ; Solomon, 323 E. Houston st. New  
  
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 ies B. 44 Murray st. New York.  
 Rhind, 137 Elm st. New York.  
 lectric Light Co. St. Louis, Mo.  
 Smith, 42 S. 5th av. New York.  
 Charles F. A. 31 Park pl. New York.  
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 : Lamp Co. 59 Murray st. New York.  
 R CHAS. W. Brookline, Mass. *see*  
*advertisers.*  
 & Co. 33 Barclay st. & 38 Park pl.  
 rk.  
 rainard, 224 6th av. New York.  
 Fred. jr. 20 College pl. New York.  
 c, 535 E. 11th st. New York.  
 Marke, 167 Division st. New York.  
 unn August, 162 Mott st. New York.  
 fg. Co. 24 Frankfort st. New York.  
 ing, 81 Murray st. New York.  
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 e David H. 80 3rd av. New York.  
 n Brass Co. 475 1st av. New York.  
 Edward R. & Co. 26 Cortlandt st.  
 rk.  
 . 11 Murray st. New York.  
 Malleable Iron Co. 42 Park pl. & 37  
 y st. New York.  
 lward & Co. 35 Warren st. New York.  
 cob G. 823 Eagle av. New York.  
 ELL, VANCE & CO. 836 & 838 Broad-  
 ew York, *see index to advertisers.*

## Electrolier Manufacturers—continued.

Murphy William T. 96 John st. New York.  
 Overback Franklin, 33 Murray st. New York.  
 Pabst & Arming, 21 Murray st. New York.  
 Pettet William, 60 Warren st. New York.  
 Pride, Fraleigh & Kyle, 23 & 25 Dey st.  
 New York.  
 Raymond C. S. & Co. 266 Greenwich st.  
 New York.  
 Reilly Solomon S. 400 and 469 Canal st.  
 New York.  
 Reilly Thomas, 829 1st av. New York.  
 Robins Wm. B. 61 Ann st. New York.  
 Rogers L. W. 15 Cornhill, Boston, Mass.  
 Rorke Edward & Co. 40 Barclay st. New York.  
 Rumpellen Herman, 256 2nd av. New York.  
 Russell Henry & Co. 42 Barclay st. New York.  
 Ryan, May & Latus, 38 Bleecker st. New York.  
 Schneider Bennett B. 35 Park pl. New York.  
 Smith Josephine D. 352 Pearl st. New York.  
 Stammer William, 153 Greenwich st., New York.  
 Traub John, 209 7th st. New York.  
 Vandewerken Eldridge, 50 Barclay st. New  
 York.  
 Warwick Saml. D. 207 Centre st. New York.  
 Weddle & Magee, 33 Murray st. New York.  
 Weiss Marcus, 301 W. 42nd st. New York.  
 Wright James T. 225 Greenwich st. New York.

## Electro Plating and Depositing Machine Manufacturers.

F.—

G.—*Maschinen zum Versilberung.*

BRUSH ELECTRIC CO. (Parent Co.) 379  
 Euclid av. Cleveland, O. *see index to advertisere.*

## Electrotypers.

F.—*Electrotypie.*

G.—*Galvaniseure.*

Abbott & Co. 12 Barclay st. New York.  
 Allison & Smith, 168 Vine st, Cincinnati, O.  
 American Type Founders, 510 Clay st. Phila. Pa.  
 Blade Ptg. & Paper Co. Toledo, O.  
 Blany C. W. jr. 8 N. Anderson st. Boston, Mass.  
 Blomgren Bros. & Co. 164 Clark st. Chicago, Ills.  
 Boston Elec. Co. 22 Pearl st. Boston, Mass.  
 Boston Type Foundry, 104 Milk st. Boston, Mass.  
 Brinkerhoff John P. 166 Greenwich st. New  
 York.  
 Brownell E. Lafayette, Ind.  
 California Electrotype Works, 134 Sutter st.  
 San Francisco, Cal.  
 California Type Foundry, 511 Sansom st. San  
 Francisco, Cal.  
 Campbell & Co. 174 Elm st. Cincinnati, O.  
 Chandler H. 13 E. Swan st. Buffalo, N.Y.  
 Cincinnati Type Foundry, 201 Vine st. Cin. O.  
 Claremont Manufacturing Co. Claremont, N.H.  
 Clark J. S. Troy, N.Y.  
 Cleveland Electrotype Foundry, 55 Frankfort st.  
 Cleveland, O.

## Electrotypers—continued.

Crane Michael, 21 College pl. New York.  
 Craike Chas. 21 Rose st. New York.  
 Denyse Wm. & Sons, 13 Frankfort st. New York.  
 Dill G. H. 222 Gold st. Philadelphia, Pa.  
 Dill Vincent, 27 New Chambers st. New York.  
 Diver F. & Co. 14 King st. East, Toronto.  
 Dominion Type Founding Co. 13 and 17 Chenniville st. Montreal.  
 Donhet A. E. 2 S. Walter st. Cleveland, O.  
 Dusenbury B. M. 322 Harmony st Philadelphia, Pa.  
 Eichleum J. & Co. 48 5th av. Pittsburgh, Pa.  
 Elm St. Pltg. Co. 176 Elm st, Cincinnati, O.  
 Fagan J. & Son, 621 Commerce st, Phila. Pa.  
 Felt Joseph P. & Co. 25 Rose st. New York.  
 Ferguson Bros. & Co. 15 N. 7th st. Philadelphia, Pa.  
 Fleming & Son, Toronto, Canada West.  
 Francis Valentine & Co. 517 Clay st. Phila. Pa.  
 Franklin Type Foundry, 168 Vine st. Cin. O.  
 Harrison & Whitlock, 110½ W. Balto st. Baltimore, Md.  
 Heymer J. C. & Co. 21 Province st. Boston, Mass.  
 Hobbs R. H. Hartford, Conn.  
 Hoe R. & Co. 504 Grand st. New York.  
 Hollingshead James H. 118 William st. New York.  
 Hurst Charles, 113 Nassau st. New York.  
 Huttie Spencer & Co. 83 Jackson st. Chicago, Ills.  
 Iowa State Register, Des Moines, Iowa.  
 Jamison Bros. 92 Diamond st. Pittsburgh, Pa.  
 Johnston Wm. G. & Co. 231 Liberty st. Pittsburgh, Pa.  
 Ketchum & Wanamaker, Indianapolis, Ind.  
 Lennox J. C. Rochester, N.Y.  
 Lent C. De Wett 30 Park pl. New York.  
 Little J. J. & Co. 10 Astor pl. New York.  
 Lohouse A. F. 14 E. Swan st. Buffalo, N.Y.  
 Lovejoy, Son & Co. 17 Vandewater st. New York.  
 Lyman N. & Sons, 36 W. Seneca st. Buffalo, N.Y.  
 McCay G. & Co. 203 Vine st. Cincinnati, O.  
 Marden Luse & Co. 139 Munroe st. Chicago, Ills.  
 Marshall & Allen, Indianapolis, Ind.  
 Mengil J. C. jr. St. Paul & Bank sts. New York.  
 Miller & Richard, 529 Commercial st. Philadelphia, Pa.  
 Mills & Co. Des Moines, Iowa.  
 Morrison A. & Son, 597 Craig st. Montreal.  
 Munsord & Hanson, 704 Sansom st. Philadelphia, Pa.  
 Nell G. W. 253 S. 12th st. Philadelphia, Pa.  
 N. E. Type Foundry Co. 243 Washington st. Boston, Mass.  
 Niven & Muir, Rochester, N. Y.  
 Northrup W. P. & Co. 13 E. Swan st. Buffalo, N.Y.  
 Onink C. J. 193 Main st. Buffalo, N.Y.  
 Pendermand & Crisand, New Haven, Conn.  
 Peters C. J. & Son, 73 Federal st. Boston, Mass.  
 Photo. Electrotpe Co. (Daniel Cherry & Co.) 13 & 15 Park row, New York.  
 Pugh A. H. 126 Walnut st. Cincinnati, O.  
 Raisbeck Electrotpe Co. 68 Beekman st. New York.

## Electrotypers—continued.

Rand A. S. & Co. Toledo, O.  
 Ringler T. A. & Co. 22 and 23 Barclay 26 and 28 Park place, New York.  
 Rounds S. P. 175 Munroe st. Chicago, I  
 Rowell R. Louisville, Ky.  
 Ryan J. & Co. South & German sts. B Md.  
 San Francisco Type Foundry, 512 Clay Francisco, Cal.  
 Schulze H. M. 98 Paydras st. New Orleans  
 Sheldon E. B. & Co. New Haven, Conn.  
 Slatterly R. F. 61 Camp st. New Orleans  
 Smith & McDougal, 82 Beekman st. New York.  
 Stodder Samuel, 90 Ann st. New York.  
 Stone J. Cambridge Port, Mass.  
 Taylor Joel W. 15 Vandewater st. New Union Electrotpe Foundry, 76 Fran Cleveland, O.  
 Warren J. D. 253 Washington st. Buffalo  
 Weed, Parsons & Co. 41 Columbia st. Albany  
 Western Electrotpe Foundry, 207 Chest St. Louis, Mo.  
 Western Newspaper Union, Des Moines,  
 Westcott & Thomson, 710 Filbert st. Philadelphia, Pa.  
 Whitcomb H. C. & Co. 22 Milk st. Boston  
 Winterburn J. & Co. 417 Clay st. San Francisco, Cal.  
 Wiseman James L. 49 John st. Montreal  
 Wood R. Troy, N.Y.  
 Zeese A. & Co. 157 Dearborn st. Chicago

## Electrotypers' Supplies.

F.—

G.—

JOSEPH DIXON CRUCIBLE CO.  
 City, N.J. and 68 Reade st. New York

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G.—Münzen.



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—*Ingenieure—Electrische Beleuchtung.*

Prof. E. M. c/o Brush Electric Association,  
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W. S. Graham, 95 Milk st, Boston, Mass.

THE ELECTRIC CO. (Parent Co.) 379  
1 av. Cleveland, O. *see index to advertisers.*

F. A. 65 5th av. New York.

Walter K. 147 Fulton st. New York.

W. 9 Bond st. & 145 B'way, New York.

J. K. & Co. 1571 B'way, New York.

WOOD THOMAS D. 95 Milk st. Boston,

Hiram, 59 Liberty st. New York.

Fraser & Kyle, 23 & 25 Dey st. New York.

## Engineers—Electrical.

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*G.—Ingenieure der Electricität.*

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Theo. P. 203 & 205 Van Buren st. Chicago,

THE ELECTRIC CO. (Parent Co.) 379  
1 av. Cleveland, O. *see index to advertisers.*

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& Co. 22 New Church st. New York.

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Electric Light Co. 65 5th av. New York.

Louis W. Brownell building, 91 West  
1st st. Providence, R.I.

FRANK GEORGE, 219 East 18th st. New

York. W. L. K. 65 5th av. New York.

A. 31 Milk st. Boston, Mass.

F. L. 65 5th av. New York.

FRANK, JAMES F. Inventors' Institute,  
13 Union, New York, *see index to advertisers.*

Radley A. r. 59. Astor house, New York.

HELMANN A. F. 1226 Chestnut st.  
Philadelphia, Pa. *see index to advertisers.*

W. H. 49 Broadway, New York.

F. G. 65 5th av. New York.

3 BROS. 55 Broadway, New York, *see*  
*index to advertisers.*

Chas. D. New York.

Frederic L. 120 Broadway, New York.

H. & Bro. 51 W. 4th st. Cincinnati, O.

W. 9 Bond st. & 145 B'way, New York.

James H. 95 Liberty st. New York.

H. Ward, 65 5th av. New York.

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ton, Mass.

H. J. 62 Artillery st. Quebec, Canada.

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Alfred M. Professor Stevens Institute of  
Technology, Hoboken, N.J.

Professor Henry Stevens Institute of  
Technology, Hoboken, N.J.

Fraser & Kyle, 23 & 25 Dey st. New York.

## Engineers—Electrical—continued.

Rae & Healy, 120 Broadway, New York.

Rocky Mountain E. L. Co. Salt Lake City, Utah.

Ruthrauff C. C. Rocky Mountain Electric Light  
Co. Salt Lake City, Utah.

Small C. S. H. asst. supt. Gold & Stock Tele-  
graph Co. & president N.Y. Electrical Society.

Smith Gerritt, W. U. Tel. Co. 195 Broadway,  
New York.

Smith T. J. 81 3rd st. Brooklyn E.D. N.Y.

Van Forstner S. F. Oswego, New York.

Van Hovenbergh & Evans, 11 Pine st. New York.

Vibberd W. H. Saratoga, N.Y.

Watts Ira. 65 5th. av. New York.

## Engineers—Electrical Consulting.

*F.—Ingénieurs-Electriciens.*

*G.—Ingenieure der Electricität.*

Barclay W. P. 65 & 162 Washington st. Chicago,  
Ills.

KEITH, N. S. 237 Broadway, New York.

Pride, Fraleigh & Kyle, 23 & 25 Dey st. New York.

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*G.—Ingenieure der Electricität.*

Pride, Fraleigh & Kyle, 23 & 25 Dey st. New York.

## Engineers—Mechanical.

*F.—Ingénieurs—Mécaniciens.*

*G.—Ingenieure—Maschinenbau.*

Adams & Carter, 109 California st. San Francisco,  
Cal.

Afshagen Emert, 234 Broadway, New York.

Angell Water Wheel Co. Calendar st. Providence,  
R.I.

Babcock & Wilcox, 30 Cortlandt st. New York.

Bacon F. W. 33 Broomfield st. Boston, Mass.

Barclay W. P. 65 and 162 Washington st. Chicago,  
Ills.

Barrus, George H. 79 Milk st. Boston, Mass.

Benjamin, Fischer & Mulberry, 224 S. Jefferson  
st. Chicago, Ills.

Benjamin, Park & George H. 235 Broadway,  
New York.

Bennet C. Fonda, Ia.

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Blaisdell Jno. H. 106 Liberty st. New York.

Blanchard, W. 195 Broadway, New York.

Bliss H. J. La Crosse, Wis.

Bordwell & Rogers, San Francisco, Cal.

Bordwell H. W. 515 California st. San Fran-  
cisco, Cal.

Boyd James T. East Boston, Mass.

BRIDGES LYMAN (C. E.) San Francisco, Cal.

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Brown J. R. Frankfort, Ind.  
 Brown Wm. S. r. 20, 46 Court st. Boston, Mass.  
 Buckley Henry W. 149 Broadway, New York.  
 Buel & Brevoort, 206 Broadway, New York.  
 Burgess C. H. Cleveland, O.  
 Burghardt C. G. Buffalo, N.Y.  
 Burley John, 36 Charlestown st. Boston, Mass.  
 Burns & Huckstep, Lebanon, Ind.  
 Buswell W. F. 223 Mission st. San Francisco, Cal.  
 Campbell & Richard, Howard C. Huntingdon st.  
 Philadelphia, Pa.  
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 Clot & Meese, 303 Mission st. San Francisco, Cal.  
 Coffin Valve Co. 295 South st. Boston, Mass.  
 Conde C. A. & Co. 1337 Buttonwood st. Phila-  
 delphia, Pa.  
 Conway G. M. Milwaukee, Wis.  
 Cook W. B. Lockport, N.Y.  
 Copeland Charles W. 24 Park pl. New York.  
 Corbett Chas. H. Continental Iron Works,  
 Greenpoint, L.I. N.Y.  
 Cragg J. 10 S. Holliday st. Baltimore, Md.  
 Creamer Jas. M. Philadelphia, Pa. & Cleveland, O.  
 Crittenden G. R. Waterloo, Ia.  
 Croskey K. 1017 Morris st. Philadelphia, Pa.  
 Croskey Knowles, 520 N. Del av. Philadelphia,  
 Pa.  
 Cully J. L. Cleveland, O.  
 CUMMING A. M. 18 Broadway, New York.  
 CUMMING GEO. 219 E. 18th st. New York.  
 Dare Benj. A. 21 Beekman st. New York.  
 Darkin Frank, 118 Liberty st. New York.  
 Darlington John H. 31 Pine st. New York.  
 Davids Chas. H. 5 Beekman st. New York.  
 Davis J. B. Cleveland, O.  
 Davison Darius, 19 Park pl. New York.  
 Davison Henry J. 231 Broadway, New York.  
 Deacon William, 131 Main st. San Francisco, Cal.  
 De Beauvais Jules, 2 Howard st. New York.  
 De Galleford J. Fairfield, Ia.  
 De Kinder Joseph J. 325 Walnut st. Philadelphia,  
 Pa.  
 Dennis J. H. Indianapolis, Ind.  
 Destach A. 135 Main st. San Francisco, Cal.  
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 Dripps Wm. A. 3324 Walnut st. Philadelphia, Pa.  
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 Dundon Bros. 248 Medford Chsn. Boston, Mass.  
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 Philadelphia, Pa.  
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 Fowler Wm. H. 8 Province st. Boston.  
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 Galloupe Francis, Lynn, Mass.  
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 Gray Albert, 148 William st. New York  
 Green A. H. Little Falls, N.Y.  
 Gregory E. B. Elmira, N.Y.  
 Griffith & Marquette, 6 W. Falls av. Phila-  
 delphia, Pa.  
 Grimshaw Robert, 430 Walnut st. Philadelphia,  
 Pa.  
 Guldlin Olaf, 1224 Mt. Vernon st. Philadelphia,  
 Pa.  
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 Vawter P. C. Indianapolis, Ind.  
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 Williams A. D. Anderson, Ind.  
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*G.—Ingenieur-Telegraphenbau.*

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 Bisgood J. Rochester, N.Y.  
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 Featherstonhaugh J. D. Schenectady, N.Y.  
 Fowler C. E. Poughkeepsie, N.Y.  
 Fuller C. S. Troy, N.Y.  
 Geor H. M. Troy, N.Y.  
 Goodwell T. Syracuse, N.Y.  
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 Griffin R. Syracuse, N.Y.  
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 Wilcoxsen G. Seneca Falls, N.Y.  
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 Anderson & Porter, River av. cor. I  
 Allegheny, Pittsburgh, Pa.  
 Anthony H. A. Albany, N.Y.  
 Archambault A. Beach cor. Marlboro'  
 delphia, Pa.  
 Armington & Sims Engine Co. 546  
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 Atlantic Steam Engine Works, Water  
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 Atlas Engine Works, 26 S. Canal st. Ch  
 Atlas Iron Works, 135 Beall st. San  
 Cal.

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 th Steam Jacket Feed Water Heater  
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 dt st. New York.  
 & Co. Norwich, Conn.  
 foot, New Haven, Conn.  
 Son, Worcester, Mass.  
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 McDowell Mfg. Co. 120 Liberty st.  
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 agnall, 40 Cortlandt st. New York.  
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 Mfg. Co. 114 Washington st. Boston,  
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 ord, 844 W. 6th st. Cincinnati, O.  
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 . Co. 84 to 88 Market st. Chicago, Ills.  
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 henandoah, Pa.  
 cKnight, 34 Penn st. Pittsburgh, Pa.  
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 . Buffalo, N.Y.  
 , 236 Federal st. Portland, Me.  
 . E. & Sons, 971 Tremont st. Boston,  
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 Stage Engine & Hydraulic Works,  
 ock st. Cincinnati, O.  
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 Cobanks & Theall, 65 Bethune st, New York.  
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 Chicago, Ills.  
 Common Sense Engine Co. Springfield, O.  
 Cooke & Co. 22 Cortlandt st. New York.  
 Copeland Edwin T. 30 Cortlandt st. New York.  
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 nati, O.  
 Corliss Steam Engine Co. Charles st. R.R. cross-  
 ing, Providence, R.I.  
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 Mass.  
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 Cruickshank G. M. 286 Dyer st. Providence, R.I.  
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 Dunbar R. & Son, Buffalo, N.Y.  
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 G. & M. Iron Works, 235 1st av. San Francisco,  
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 Herreshoff Mfg. Co. Bristol, R.I.  
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*G.—*

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*G.—Glauglocken-Fabrikanten.*

Barstaedt Albert A. 12 Rennick st. New York.  
 Bowie S. R. & Co. 11 Murray st. New York.  
 Cutter Frank L. 7 Murray st. New York.  
 Day William, 47 Vesey st. New York.  
 Katz Isaac, 535 E. 11th st. New York.  
 Pardessus Semon J. 9 Park pl. New York.  
 Quarre V. Co. 11 Murray st. New York.  
 Wallace Edward E. 1416 Ridge av. and 1419  
 Fairmount av. Philadelphia, Pa.  
 Wapler Brothers & Co. 22 Warren st. New York.  
 Weber Phillip, 50 Barclay and 45 Ann sts.  
 New York.  
 Wiggers Eva, 180 E. Houston st. New York.  
 Wilson James, 508 6th st. New York.

## Graphite Manufacturers.

*F.—*

*G.—*

JOSEPH DIXON CRUCIBLE CO. 229 R. R.  
 av. Jersey City, N.J. and 68 Reade st. New  
 York.

## Grease Merchants.

*F.—*

*G.—*

JOSEPH DIXON CRUCIBLE CO. 229 R. R.  
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 York.

**Gutta Percha Covered Wire  
Manufacturers.**

*F.—*

*G.—*

TAYLOR GEO CROSLAND, Dee Side Electric Works, Neston, Cheshire, England, *see index to British advertisers.*

**India Rubber and Gutta Percha Brokers,  
Manufacturers, and Dealers.**

*F.—Caoutchouc (Fab. et Marchands de.)*

*G.—Indiarubber-Händler.*

Abecasis J. S. & Co. 41 Beaver st. New York & 140 Congress st. Boston, Mass.

Atlantic Rubber Co. 21 Park pl. nr. Broadway, New York.

BISHOP GUTTA PERCHA WORKS, 420, 422, 424 and 426 E. 25th st. New York. (W. W. Marks, supt.) *see index to advertisers.*

Boston Car Spring Co. 11 Federal st. Boston, Mass.

Boston Elastic Fabric Co. 173 & 175 Devonshire st. Boston, Mass.

Boston Rubber Co. 35 Arch st. Boston, Mass.

Dodge George. 22 Platt st. New York.

Hodgkiss Geo. 66 Boerum st. Brooklyn, N.Y.

Kenton Chas. 229 Broadway, New York.

McNider James, 138 Water st, New York.

Soltan Robt. 73 Franklin st. New York.

**Insulator (Electrical) Manufacturers.**

*F.—Isoloirs (Fab. d').*

*G.—Isolatoren-Fabrikanten.*

Brooks David, 22 S. 21st st. Philadelphia, Pa.

Chicago (The) Insulating Co. Office, 122 La Salle st.; Manufactory, 104 and 136 Franklin st. Chicago, Ills.

COURTENAY & TRULL (Gelatinized Fibre), 15 Dey st. New York, *see index to advertisers.*

Union Porcelain Works, 300 Eckford st. Greenpoint, Brooklyn, N.Y.

**Inventors—Electrical.**

*F.—Inventeurs-électriques.*

*G.—Bureau zur Ausnützung von Erfin Lungen.*

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PINKHAM & SEAL, 38 Hudson st. Philadelphia, Pa. *see index to advertisers.*

Pride, Fraleigh & Kyle, 23 and 25 Dey st. New York.

**Iridium Manufacturers.**

*F.—Iridium (Fab. d').*

*G.—Iridium-Fabrikanten.*

IRIDIUM COMPANY, S.E. and Plum sts. Cincinnati, O.

**Iron Merchants.**

*F.—*

*G.—*

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Carmichael & Emmens, 130 Cedar st. New York.

Crocker Brothers, 32 Cliff st. New York.

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Lee James & Co. 72 Pine st. New York.

MONTGOMERY & CO. 105 Fulton st. New York, *see index to advertisers.*

Williamson & Co. 63 Wall st. New York

**Iron Pipe Manufacturers.**

*F.—*

*G.—*

Benton Faulkner & Bird, 35 Dey st. New York.

Blackslee E. G. & Co. 80 Centre st. New York.

Bonner & Vancourt, 242 Canal st. & 517 st. New York.

Campbell Felix, 79 John st. New York.

Chelmsford Foundry Co. 131 Portland st. Boston, Mass.

Chester Pipe & Tube Co. Chester, Pa.

Cincinnati and Newport Iron and Pipe Co. Newport, Ky.

Hondlette F. A. & Co. 19 Battery wharf Boston, Mass.

Hoover J. & Son, Norristown, Pa.

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Long D. & Co. Louisville, Ky.

Loughry Wm. P. 16 Cliff st. New York.

Rinkle Wm. 126 Broadway, New York.

**Lathe Makers for Electricians.**

*F.—Tours pour Electriciens (Fab. d').*

*G.—Drehbanken für Elektriker.*

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Beggs James & Co. 9 Dey st. New York.

Bowker & Tripp, North Water st. cor. 1st st. New Bedford, Mass.

Brown Ephraim, Lowell, Mass.

Clemens Foundry & Machine Co. Derby, Mass.

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Frasse & Co. 62 Chatham st. New York.

Goodspeed & Wyman, Winchendon, Mass.

Harrington Edwin & Son, N. 15th st. Philadelphia, Pa.

Hill, Clarke & Co. 800 N. 2nd st. St. Louis, Mo.

Holt N. W. Bennington, Vt.

Huse Warren D. Laconia, N.H.

Johnson Israel H. junr. & Co. 1423 & 1425 Callowhill st. Philadelphia, Pa.

Jones & Lamson Machine Co. Windsor, Vt.

Kay Henry E. Fall River, Mass.

Little Charles E. 59 Fulton st. New York.

Lovell F. S. Chicopee, Mass.

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ERY & CO. 105 Fulton st. New  
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J.

Co. 597 Washington st. Boston,

s. Junction Shop, Worcester, Mass.

h. Co. Putnam, Conn.

chine Co. Fitchburg, Mass.

anus, Fitchburg, Mass.

Waltham, Mass.

linder, Saw & Machine Co. Taunton.

. Co. 45 Charleston st. Boston, Mass.

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atch Tool Co. Waltham, Mass.

D. & Co. Fitchburg, Mass.

. & Co. 23 Hermon st. Worcester,

. W. Fitchburg, Mass.

Fletcher st. c. Rock st. Lowell, Mass.

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**ricant Manufacturers.**

IXON CRUCIBLE CO. 229 R. R.  
City, N.J. and 68 Reade st. New

**ne Screw Manufacturers.**

*F.—Vis (Fab. de).*

*V.—Sedrauben-Fabriken.*

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, A. C. 35 Canal st. Waterbury,  
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**ne Tool Manufacturers.**

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**agnet Manufacturers.**

*F.—Aimants (Fab. d').*

*V.—Magne-Verfertiger.*

ANN A. F. 1226 Chestnut st.  
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Manufacturers.**

*F.—*

*G.—*

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Cotter H. 44 4th st. Brooklyn, E. D. N.Y.

Hendrick Dr. 467 5th av. New York, above  
40th st.

**Manganese Merchants.**

*F.—Marchands—Manganèse.*

*G.—Braunstein-Händler.*

Adams, Wellington M.D. 2210 Wabash av. Chicago,  
Ills.

Backus John, 446 Cherry st. New York.

LAMSON J. S. & BRO. 77 Maiden la. New York.

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Pyrolusite Manganese Co. 54 Cliff st. New York.

Woodward C. H. 54 Cliff st. New York.

**Manifold and Carbonic Papers.**

*F.—*

*G.—*

FRANKS, ROBINSON & CO. The "Victor"  
celebrated Brand ; GEO. CUMMING, Agent,  
219 E. 18th st. New York, *see index to British  
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New York.

**Metal Dealers.**

*F.—Métaux (Marchands de).*

*G.—Metall-Händler.*

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Cliff st. New York, *see index to advertisers.*

Crocker Bros. 32 Cliff & 232 S. sts. New York.

Carolan, Cory & Co. 119 California st. San F'risco.  
Cal.

DODGE S. C. Lowell, Mass.

Dunham, Carrigan & Co. 107 to 111 Front st.  
San Francisco, Cal.

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Boston, Mass. Philadelphia, Pa. Waterbury,  
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Holmes & Weissel Metal Co. 529 W. 24th st.  
New York.

Merchant & Co. Cliff st. c. Beekman st. New  
York & 525 Arch st. & 520 Cherry st. Phila-  
delphia, Pa.

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cisco, Cal.

MONTGOMERY & CO. 105 Fulton st. New  
York, *see index to advertisers.*

N. Y. Smelting & Refining Co. 509 West st. New  
York.

Revere Copper Co. 242 South st. New York.

## Merchants—Mica.

*F.—Marchands-Mica.*

*G.—Glimmer-Händler.*

American Mica Mining Co. Worcester, Mass.

Baystate Mining Co., 142 Kneeland st, Boston, Mass.

## Merchants—Zinc.

*F.—Marchants-Zinc.*

*G.—Zink-Händler.*

PALMER WIRE CO. PALMER, MASS. *see index to advertisers.*

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*G.—Modelle—Fabr.*

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JOST EDMUND, 320 Market st. Newark, N. J.

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WESTERN ELECTRIC CO. Chicago & Indianapolis, *see index to advertisers.*

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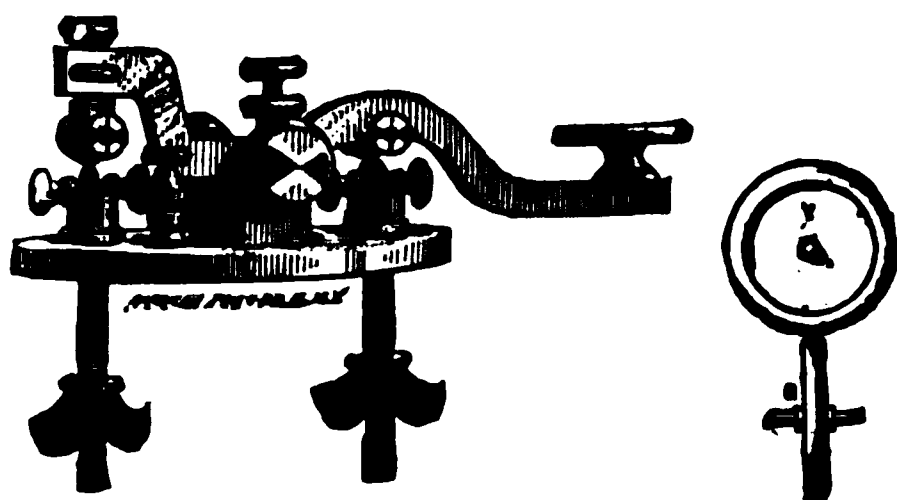
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Mac Farren, Levy & Co. Indiana, and Chicago, Ills.

Mass. Screw Co. Holyoke, Mass.

Miles F. S. 205 Quarry st. Philadelphi

Minter H. Worcester, Mass.

Morris & Essex, Brattleboro, Vt.

Mount Carmel Bolt Co. Mount Carmel, Conn.

Newton Bros. Greenville, Norwich, Ct

North-Western Screw Co. C. F. War Canal st. Factory; Loomis st. co Chicago, Ills.

Nutting L. M. & Co. East Concord, N

Parnell, W. Albany, N.Y.

Philadelphia Screw Co. (Limited), Ph Pa.

Prindle F. B. Milldale, Southingt haven, Conn.

Rochester Machine Screw Co. Brow Rochester, N.Y.

Russell, Burdall & Ward, Port Cheste

Russell M. F. G., Erwin & Co. New Ha

Southworth M. & G. Stoughton, Mass.

Standard Mfg. Co. Erie & King Chicago, Ills.

Stockwell Screw and Machine Co. 56 Cleveland, O.

Thurston Manufacturing Co. Marlboro

Turner Joseph, Lowell, Mass.

Union Steel Screw Co. Case av. and Cleveland, Ohio, and 91 Lake st. Ch

Wilder Elihu, 216 Washington st. Bos

Worcester Machine Screw Mfg. Co. Mass.



**Stock, and Die Tap Makers.**

*F.—Vis (Fab. de).*

*G.—Schrauben-Fabriken.*

J. N. & C. 17th st. Venango, Phila-

fig. Co. Pawtucket, R.I.

irard, Cleveland, Ohio

crew Co. 106 W. Washington st.

Ills.

w & Tap Co. 520 Vine st. Cincinnati, O.

Screw Co. 105 Summer st. Boston, Mass.

h A. A. & Co. Fitchburg, Mass.

RD MACHINERY SCREW CO.

l, Conn.

MERY & CO. 105 Fulton st. New

*see index to advertisers.*

T. W. & Co. 30 Hanover st. Boston,

**Shafting, Pulleys, &c.**

*F.—Transmissions (Fab. de).*

*G.—Schäften-Fabriken.*

& F. 60 & 66 Cannon st. & 3 Park pl.

rk.

PLACE MACHINERY CO. 121

rs st. and 101 Reade st. New York.

WIRE CO. PALMER, MASS, *see*  
*advertisers.*

**Smelters.**

*F.—Fondeurs.*

*G.—Schmelzer.*

aniel, 87 N. 5th st. Brooklyn. N. Y.

. & Co. cor. Wallabout & Bedford avs.

n, N.Y.

OR BRONZE SMELTING CO.

ED, 512 Arch st. Philadelphia, Pa.

*to advertisers.*

**Speed Indicators.**

*F.—Compteurs de vitesse.*

MERY & CO. 105 Fulton st. New

*see index to advertisers.*

**Spring Makers.**

*F.—Ressorts.*

WIRE CO. PALMER, MASS. *see*

*advertisers.*

**Steel Manufacturers.**

*F.—Fabricants d'acier.*

*G.—Stahl-Fabriken.*

MERY & CO. 105 Fulton st. New York.

*to advertisers.*

**Storage Batteries.**

*F.—Accumulateurs.*

*G.—Accumulatoren.*

ELECTRIC CO. (Parent Co.) 379

iv. Cleveland, Ohio. *see index to adver-*

**Telegraph Companies.**

*F.—Télégraphes (Compagnies de).*

*G.—Gesellschaften zur Beförderung von Telegrammen.*

Albany, Troy & Sand Lake Telegraph Co. 120

Broadway, New York.

American Atlantic Cable Telegraph Co. 195

Broadway, New York.

American Automatic Telegraph Company, 52

Broadway, New York.

American District Telegraph Co. 52 S. 5th av.

and Broadway, New York.

AMERICAN RAPID TELEGRAPH CO.

Broadway, New York.

American Teleg & Cable Co. 195 Broadway,

New York.

American Union Telegraph Co. 135 Broadway,

New York, and 31 State st. Boston, Mass.

Arrondo Senor Don Bernardo de Director of

Telegraphs, Havana, Cuba

Baltimore & Ohio Telegraph Co. 63 & 315

Broadway, 106 Wall st. New York, & 211

Washington st. Boston, Mass.

Baltimore & Waverly Telegraph Co. 49 N.

Holliday st. Baltimore, Md.

Bankers & Merchants Telegraph Co. 187 Broad-

way, New York; 137 Whitehall st. New York;

22 W. 4th st. Cincinnati, O; 23 Metropolitan

blk. and 6 Exchange pl. Chicago, Ills. (A. C.

Knapp, general manager).

Boston Electric Protective Association, 56

Summer st, Boston, Mass.

Carhart H. S. Evanstown, Ills.

Central American Telegraph & Telephone Co.

Sears bldgs. Boston, Mass.

CENTRAL CONSOLIDATED CABLE CO.

(W. B. Waycott, manager) 16 Broad st. New

York.

Central & South American Telegraph Co. 37

Wall st. New York.

Chicago & Milwaukee Teleph. Co. (C. G. Scholes,

supt.) 7 Exchange pl. Chicago, Ills.

Chicago Telegraph Supply Co. cor. Washington

and Market sts. Chicago, Ills.

City & Suburban Telegraph Assurance 4th st.

cor. Walnut st. Cincinnati, O.

Commercial Telegram Co. 120 Broadway, New

York.

Continental Telegraph Co. r. 43, 95 Milk st.

Boston, Mass.

Continental Telegraph Co. 95 Wall, 86 Beaver,

133 Pearl, 71 Worth, & 37 Broad sts. New

York.

Del. & Hud. Canal Co. Maiden la. & Dean st.

Albany, N.Y.

Direct U. S. Cable Co. 16 Broad st. New York,

and 122 State st. Boston, Mass.

District Telegraph Co. (Thos. Roche, general

manager), 22 Devonshire st. Boston, Mass.

Domestic Telegraph & Telephone Co. 792 Broad

st. New York.

Exchange Telegraphic Co. 2 Broad st. New York.

Fire Alarm and Police Telegraph Co. City Hall,

Baltimore, Md.

## Telegraph Companies—continued.

Gamewell Fire Alarm & Telegraph Co. 1½ Barclay st. New York.  
 Gold & Stock Telegraph Co. (Geo. B. Scott, Supt.) 197 Broadway, and 185 5th av. New York, 4th st. c. Vine st. Cincinnati, O. and 7 Merchants Exchange, Boston, Mass.  
 Holmes Burglar Alarm Telegraph Co. 518 Broadway, New York.  
 International Ocean Telegraph Co. 195 & 197 Broadway, New York.  
 Kiernan's Telegraph News Agency of London stock, New York.  
 Law Telegraph Co. 140 Fulton st. New York.  
 Manhattan Dist. Telegraph Co. executive offices, 35 & 37 Vesey st. New York.  
 Manly Telegraph Co. 420 Liberty st. Philadelphia, Pa.  
 Merchants Mfg. & Constn. Co. 84 Broad st. New York.  
 Mexican Telegraph Co. 37 Wall st. New York.  
 Mutual District Messenger Co. (Limited), 29 Murray, 33 Warren, 48 New, 63 Cedar sts. 200, 850, 950 & 1209 B'way, 399 5th av. 812 & 996 6th av. New York.  
 New York Land & Ocean Telegraph Co. 27 William st, New York.  
 Philadelphia Local Telegraph Co. (Hy. Bentley), Philadelphia, Pa.  
 Philadelphia Reading and Pottsville Telegraph Co. 204 So. 4th st. Philadelphia, Pa.  
 Pneumatic Signal Telegraph Co. 75 Astor house, New York.  
 Postal Telegraph Co. 49 Broadway, New York.  
 Sandy Hook, Quarantine & City Island Telegraph Co. 66 Beaver st. New York.  
 Secret Telephone & Telegraph Co. (C. A. Randall genl. manager), 160 Broadway, New York.  
 TIME TELEGRAPH CO. Temple et. Beekman st. New York, *see index to advertisers.*  
 Watkins Automatic Signal Telegraph Co. 294 Broadway, New York, and 283 Franklin st. Boston, Mass.  
 West India Telegraph and Telephone Co. Ltd. Chillicothe, O.  
 WESTERN UNION TELEGRAPH CO. (R. C. Clowry, gen. supt.) La Salle st. W c. Washington st. Chicago, Ills. 109 State st. Boston, Mass. and 195 Broadway, New York. *See list of officers.*

## Telegraph Instrument Makers.

*F.—Instruments télégraphiques (Fab. d').*

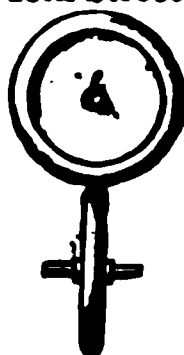
*G.—Telegraphische Instrumente—Fabr.*

BAHR & ZAHN, 108 Liberty st. New York.  
 BOSTON ELECTRIC CO. 550 Washington st, Boston, Mass. *see index to advertisers.*  
 BOWEN, W. J. Norwalk, O. *see index to advertisers.*  
 Buckley Thos. M. 61 Cedar st. New York.

## Telegraph Instrument Makers—

Carhart H. S. Evanstown, Ills.  
 Chubbucks A. G. & Sons, Utica, N.Y.  
 Cleveland Electrical Mfg. Co. 91 Westm Providence, R.I.  
 CUMMING & BRINKERHOFF, 219 st. New York.

**A PERFECT KEY.**—All telegraphists send postal card to Cumming & Brinkerhoff, 18th Street, New York, and receive, post-paid, illustrated descriptive circular, extracts from some thirty prominent publications in America and the Ohio Mechanics' Institute (under battery five months, 18 before making award), and Atlantic reports on the *Cumming Contact Disc Electrodes*; names of hundred operators, electricians and who have tested the keys and put in their favor: cuts of instrument this attachment, and medals awarded it in London, Atlanta, Cincinnati and New York. See circular. Address as above, 219 E. 18th St., N



ELECTRICAL SUPPLY CO. 17 Dey York, *see index to advertisers.*

FAIRMAN JAMES F. Inventors' Cooper Union, New York.

Fix & Hermann, 169 & 170 Fulton st. N District Telegraph Instruments.

FLEISCHMANN A. F. 1226 Chestnut delphia, Pa. *see index to advertisers.*

Gilland R. R. Mishawaka, Ind.

Goodrich & Moore, 180 Main st, Buffalo

HARBERT EDW. E. & CO. 159 La Chicago, Ills.

Hubbell & Merwin, New Haven, Conn.

JONES C. E. & BRO. 51 W. 4th st. Cincinnati

Lockwood & Foster, 21 Park row, New

LONGSTREET J. H. 9 Barclay st. New

Lyman A. B. 36 South Water st. Cleveland

Merchants Union Telegraph Machine Co bldg. r. 53, Boston, Mass.

MOORE A. F. 200 & 242 3rd N. st. Philadelphia.

PARTRICK & CARTER, 114 S. 2nd s delphia, Pa.

Pearce & Jones, 79 John st. New York.

Post & Co. Cincinnati, O.

Prentice W. H. Utica, N.Y.

Pride, Fraleigh & Kyle, 23 & 25 Dey st. N

REDDING JEROME & CO. 30 Har Boston, Mass. *see index to advertisers.*

Smith T. J. 81 3rd st, (two doors from Brooklyn, E.D. N.Y.

THE CHAS. WILLIAMS JUN. BROS THE WESTERN ELECTRIC CO.

115 Court st. Boston, Mass. *see index tisers.*

TILLOTSON L. G. & CO. 5 & 7 Dey York, *see index to advertisers.*

UNION ELECTRIC MANUFACTURING New York, *see index to advertisers.*

WESTERN ELECTRIC CO. Chicago York, Indianapolis & Boston, *see advertisers.*

Wirsching Aloys, 28 Centre st. New York

## ph and Telephone Supplies.

—*Appareils pour télégraphie.*

—*Telegraphenbau — Lieferanten.*

Insulator Co. 7 Beekman-st. New York.

J. 40 Broad st. New York.

A. 84 Broad st. New York.

s E. 587 & 97 Craig st. Montreal.

Telegraph Supply Co. (Fred W. Roebling), 10 & 12 Market st. Chicago, Ills.

CAL SUPPLY CO. 17 Dey st. New York. *see index to advertisers.*

e Screw Co. 104 John st. New York.

. 40 Cortlandt st. New York.

r A. & Co. 95 Fulton st. New York.

. 94½ Front st. Toronto, Canada.

Fire Alarm Teleg. Co. 1½ Barclay st. N.Y.

H. 95 Liberty st. New York.

43 Centre st. New York.

K. 120 Broadway, New York.

J. r. 37, 209 Washington st. Boston,

ISS C. B. 120 Broadway, New York.

Manufacturing Co. Harrisburg, Pa.

V. & Co. 67 Liberty st. New York.

B. 50 Bromfield st. Boston, Mass.

. H. Louisville, Ky.

E. & BRO. Carlisle bldg. Cincinnati,

urglar Alarm Co. 59 Liberty st. N.Y.

J F. E. & CO. 145 Broadway, and 86 street, New York.

THE BATTERY CO. 149 W. 18th st. N.Y. *see index to advertisers.*

& Co. 160 W. Main st. Rochester N.Y.

Fuller, 540 W. 16th st. New York.

Thomas A. 540 W. 46th st. New York.

Mnfg. & Construction Co. 54 Broad York.

Robert & Co. 672 Craig st. Montreal,

MERY & CO. 105 Fulton st. New York. *see index to advertisers.*

Electrical Supply Co. (H. J. McHugh), 45 Alexander st. Montreal, Canada.

L. F. 7 South st. Baltimore Md.

W. K. & CARTER, 114 S. 2nd st. Philadelphia.

K. 32 S. 7th st. Philadelphia, Pa.

Telephone Co. 4 E. 14th st. New York.

& Co. (57 N. J. Rl. Rd. av.) Newark, N. J.

leigh & Kyle, 23 & 25 Dey st. New York.

. 161 W. Pearl st, Cincinnati, O.

G JEROME & CO. 30 Hanover st. Mass.

NGS JNO. A. SONS CO. 117 & 119 st. New York & Trenton, N.J.

AU D. 4th av. near 138th st. New York.

omb & Jewellery Co. 33 Mercer st. N.Y.

thew, 259 W. 27th st. New York.

O. 13 W. 4th st. Cincinnati, O.

## Telegraph & Telephone Supplies—contd.

STANDARD ELECTRICAL WORKS, Cincinnati, O. *see index to advertisers.*

Telegraph Supply Co. 71 Ontario st. Cleveland, Ohio.

THE CHARLES WILLIAMS JR. BRANCH OF THE WESTERN ELECTRIC CO. 109 & 115 Court st. Boston, Mass. *see index to advertisers.*

TILLOTSON L. G. & Co. 5 Dey & 143 Centre sts. New York, *see index to advertisers.*

Triplex Insulated Wire Co. New York.

UNION ELECTRIC MANUFACTURING CO. New York, *see index to advertisers.*

Union Switch & Signal Co. Pittsburgh, Pa.

VIADUCT MNFG. CO. (successors. to Davis & Watts), Office—Chamber of Commerce bld. rs. 29 & 31. Works—Relay Station, B. & O. Railway, Md. A. G. Davis, president, *see index to advertisers.*

W. A. Telegraph Co. (W. Earle) N. Sidney, Nova Scotia.

Watt's Telephone Co. Louisville, Ky.

Welmot S. J. Direct Cable Office, Rye, N.H.

WESTERN ELECTRIC CO. 224 Kinzie st. Chicago, Ills. 62 N. Church st. New York, Indianapolis, Ind. & Boston, Mass. *see index to advertisers.*

Wirshing Aloys, 28 Centre st. New York.

Wolfe L. W. & Co. 120 S. 14th st. cor. Douglas st. Omaha, Neb.

## Telegraph and Telephone Pole Manufacturers.

F.—

G.—

BARNES & SNOW, Bangor, Mo. *see index to advertisers.*

BROWNLEE & CO. foot of Shelby st. Detroit, Mich.

DOW GEORGE Q. North Epping, N.H. *see index to advertisers.*

RIPLEY HENRY C. East Saginaw, Mich. *see index to advertisers.*

## Telegraph Works.

F.—*Usines de télégraphes.*

G.—*Telegraphen-Fabrik.*

Pride, Fraleigh & Kyle, 23 & 25 Dey st. New York.

## Telegraphic Codifiers.

F.—*Chiffres pour Télégraphie.*

G.—*Chiffren-Codex für Telegraphisten.*

CUMMING GEO. 219 E. 18th st. New York. Meyer's & Garsins Codes.

Harvey H. 125 Pearl st. New York.

Keller John, 88 Walker st. New York.

Law S. C. 30 & 32 Cedar st. New York.

Palmer J. E. 128 Broadway, New York.

Phillips W. P. 187 Broadway, New York.

Shepperson A. B. 25 Beaver st. New York.

Snow Francis H. Victoria bldgs. Greenfell st. Adelaide, Australia.

## Telephone Apparatus Makers.

*F.—Appareils téléphoniques (Fab. d').*

*G.—Telephon-Apparate—Fabr.*

- American Bell Telephone Co. 95 Milk st. Boston, Mass.
- BOSTON ELECTRIC CO. 550 Washington st. Boston, Mass. *see index to advertisers.*
- BOWEN W. J. Norwalk, O. *see index to advertisers.*
- BROWNLEE & Co. (Poles), Office, Foot of Shelby st. Detroit, Mich.
- ELECTRICAL SUPPLY CO. 17 Dey st. New York. *see index to advertisers.*
- ELGIN TELEPHONE CO. (W. Hubbard, patentee), ELGIN, ILLS.
- FLEISCHMANN A. F. 1226 Chestnut st. Philadelphia, Pa. *see index to advertisers.*
- HARBERT EDWARD E. & CO. 159 La Salle st. Chicago, Ills.
- Hicatzman A. Howard 346 North Stricker st. Baltimore, Md.
- HOLCOMB J. R. & CO. Atwater bldgs. Cleveland, O.
- JONES C. E. & BRO. 51 West 4th st, Cincinnati, O.
- LONGSTREET, J. H. 9 Barclay st. New York. *see index to advertisers.*
- Patterson J. M. 91 Grant st. Pittsburgh, Pa.
- Post & Co. Cincinnati, O.
- Pride, Fraleigh & Kyle, 23 & 25 Dey st. New York.
- ROEBLING J. A. SONS CO. wire, 117 and 119 Liberty st. New York.
- Rose, P. L. St. Louis, Mo.
- Sheridan W. F. & Co. 84 Wall st. New York.
- Smith T. J. 81 3rd st. (two doors from Broadway) Brooklyn, E.D. N.Y.
- STANDARD ELECTRICAL WORKS, Cincinnati, O. *see index to advertisers.*
- THE CHARLES WILLIAMS JUN. BRANCH OF THE WESTERN ELECTRIC CO. 109 and 115 Court st. Boston, Mass.
- TILLOTSON L. G. & Co. 5 & 7 Dey st. New York, *see index to advertisers.*
- United States Telephone Mfg. Co. offices, 64 Cedar st. New York.
- WESTERN ELECTRIC CO. New York, Chicago, Boston & Indianapolis, *see index to advertisers.*

## Telephone Cabinet Work.

*F.—Téléphones (Fab. de boîtes pour).*

*G.—Telephonkasten—Fabr.*

- French C. B. 1st st & Vernon av. L. 3, New York.
- Kinsey E. W. 60 & 62 Elizabeth st. New York.

## Telephone Companies.

*See official list of Exchanges.*

*F.—Compagnies des Téléphones.*

*G.—Telephon-Compagnien.*

- American Bell Telephone Co. room. 52, 95 Milk st. Boston, Mass.
- American Cont. & Moe. Hall Telephone Co. 95 Milk st. Boston, Mass.
- American Speaking Telephone Co. 195 Broadway, New York.
- Bell Telephone Co. 4th & Chestnut sts. Philadelphia, Pa. and 417 Olive st. St. Louis, Mo.

## Telephone Companies—continued.

- Central and Western Telephone Co. 1101 Chicago, Ills.
- Chicago Teleph. Co. (Anson Stager, 110 La Salle st. Chicago, Ills.
- Colorado Telephone Co. Denver, Col.
- Columbia & Panama Telephone & Tel 43 Montgomery st. Jersey City, N.J.
- Commercial Telephone Co. 468 B'way N.Y.
- Connecticut Telephone Co. New Haven
- Currier Telephone Bell Co. r. 8, 2 Pen Boston, Mass.
- Dolbear Electric Telephone Co. 70, W st. Boston, Mass.
- Duplex Telephone Co. 13 South Water land, Ohio.
- East Tennessee Telephone Co. 197 New York.
- Eaton Telephone Co. 65 Henry st. Brook
- HARBART EDWARD E. & Co. 159 1 Chicago, Ills.
- Ithaca Telephone Exchange (A. Anth ager) Ithaca, N.Y.
- Long Island Telephone Co. 379 1 Brooklyn, N.Y.
- Metropolitan Telegraph & Telephon Greenwich, 82 Nassau, and 97 Spr 195, 198, 792, 923, 943, 1321 & 1415 Whitehall, 35 William & 33 M New York.
- Mexican National Bell Telephone Co Milk st. Boston, Mass.
- Mexican Telephone Co. 55 Broadway, 1
- Mexican Telephone Co. (G. P. Wiley, City of Mexico.
- Midland Telephone Co. (Nath. G manager), 110 La Salle st. Chicago Canton, O.
- National Cap. Telephone Co. 1,413 G ington, D.C.
- New Orleans Telephone Exchange, 35 1 st. New Orleans, La.
- NEW YORK ELECTRIC LINES CO F. Sherbourne, manager), New York
- New York & Pennsylvania Telephone & Co. (W. N. Eustabrook, manager), Elb
- Overland Telephone Co. (Buchanan & 71 Broadway, New York.
- People's Telegraph & Telephone Co. 4 st. 115 Broadway, & 4 E. 14th st. N
- Sandy River & Rangeley Telephone Co Me.
- Secret Telephone & Telegraph Co. 10 way, New York.
- Southern Bell Telephone & Telegraph Broadway, New York.
- Suburban Telephone Co. 24 Congress e Mass.
- Telephone Desp. Co. 40 Pearl st. Bosto
- Telephone Exchange (H. C. Benas Meadville, Pa.
- Tobin F. 1613 Apton st. Philadelphia,
- Toledo Ohio Exchange Co. (H. M. L. manager), Toledo, O.



**Companies—continued.**

Telegraph & Telephone Co. Limited,  
e, O. and Jersey City, N.J.  
Telegraph & Telephone Co. (Preston  
, general manager), St. John's, Porto  
I. Home address: Franklin, Mass.  
Telephone Co. (Anson Stager, president)  
alle st. Chicago, Ills.  
Telephone Co. 35 William and 33  
ts. New York.

**Phone Instrument Makers.**

*F.—Instruments de téléphones.*

*G.—Telephon-Instrumente.*

leigh & Kyle, 23 & 25 Dey st.  
k.  
EDW. E. & Co. 159 La Salle st.  
Ills.  
St. Louis, Mo.

**Phones—Private Lines Makers.**

*F.—Téléphones.*

*G.—Telephon-bau.*

LEPHONE CO. (Kane Co.), ELGIN,  
Wm. Hubbard, patentee).  
B J. R. & CO. Atwater buildings,  
d, O.

**g Machines for Wire, etc.**

*—Machines pour essayer le fils.*

CAL SUPPLY CO. Ansonia, Conn. &  
st. New York. *see index to advertisers.*

**Makers—Brass & Copper.**

*F.—Tubes-Laiton et Cuivre.*

*—Röhren-Messing und Kupfer.*

A BRASS & COPPER CO. 19 and 21  
New York. *see index to advertisers.*  
er Iron Co. 73 Pearl st. New York  
e Coenties Slip), (Nahum Setson Jr.

be Co. 65 Washington st. New York.  
arles B. 24 John st. New York.  
B, BOOTH & HAYDENS, New York,  
lphia, Pa. Waterbury Conn. and  
, England.

**ie and Water-wheel Makers.**

*F.—Turbines.*

*G.—Wasser-räder.*

WATER MOTOR CO. Newark, N.J.  
WATER MOTOR CO. (R. Chandler,  
r), 14 Cooper Union, New York,  
for driving Electric Machines etc.  
*see index to advertisers.*  
JAS. & CO. Springfield, Ohio, and  
erty st. New York.

**Underground Systems—(Telegraph.)**

*F.—*

*G.—*

American Sectional Electric Underground Co.  
W. H. Johnson, pres. 216 S. 3rd st. Phila. Pa.  
Brooks D. H. Underground Tel. N. E. cor. 3rd  
and Chestnut sts. Philadelphia, Pa.  
CUMMING & BRINKERHOFF, 219 East 18th  
st. New York, *see index to advertisers.*  
Morse Underground Conduit Co. 220 S. 30th st.  
Philadelphia, Pa.  
U. S. Underground Telegraph Co. 69 William  
st. New York.

**Vices—Parallel—Wrought & Cast Iron.**

*F.—*

*G.—*

MONTGOMERY & CO. 105 Fulton st. New  
York, *see index to advertisers.*

**Vulcanized India Rubber**

**Manufacturers.**

*F.—Guttapercha.*

*G.—Vulcanisirter Indiarubber.*

New York Belting & Packing Co. 29 Park row,  
New York.

**White Lead Manufacturers.**

*F.—*

*G.—Weisblei.*

Devoe F. W. & Co. cor. Fulton and William sts.  
New York.

**Wire Cord Manufacturers.**

*F.—Fils d'acier, etc.*

*G.—Drahtseile.*

PALMER WIRE CO. PALMER, MASS, *see*  
*index to advertisers.*

**Wire Coverers—Cotton.**

*F.—Fils recouverts—Coton.*

*G.—Drahtspinner—Coton.*

AMERICAN ELECTRICAL WORKS, 67  
Stewart st. Providence, R.I. *see index to adver-*  
*tisers.*

ANSONIA BRASS & COPPER CO. 19 and 21  
Cliff st. New York, *see index to advertisers.*

ELECTRICAL SUPPLY CO. 17 Dey st. New  
York, and Ansonia, Conn.

HOLMES, BOOTH & HAYDENS, New York,  
Philadelphia, Pa. Waterbury Conn. and Lon-  
don, England.

WESTERN ELECTRIC CO. New York,  
Boston, Chicago, and Indianapolis, *see index*  
*to advertisers.*

**Wire Coverers—Indiarubber and Gutta Percha.**

*F.—Fils recourverts—Indiarubber.*

*G.—Drahtspinner—Indiarubber.*

AMERICAN ELECTRICAL WORKS, 67 Stewart st. Providence, R.I. *see index to advertisers*

ELECTRICAL SUPPLY CO. 17 Dey st. New York, and Ansonia, Conn. *see index to advertisers.*

TAYLOR G. CROSLAND, Dee Side Electric Works, Neston, Cheshire, England. *see index to British advertisers.*

**Wire Coverers—Insulated.**

*F.—Fils recourverts.*

*G.—Drahtspinner.*

AMERICAN ELECTRICAL WORKS, 67 Stewart st. Providence, R.I. *see index to advertisers.*

TAYLOR G. CROSLAND, Dee Side Electric Works, Neston, Cheshire, England. *see index to British advertisers.*

WESTERN ELECTRIC CO. New York, Boston, Chicago, and Indianapolis, *see index to advertisers.*

**Wire Coverers—Silk.**

*F.—Fils recourverts Soie.*

*G.—Drahtspinner—Seide.*

AMERICAN ELECTRICAL WORKS, 67 Stewart st. Providence, R.I. *see index to advertisers.*

ANSONIA BRASS & COPPER CO. 19 and 21 Cliff st. New York, *see index to advertisers.*

ELECTRICAL SUPPLY CO. 17 Dey st. New York. *see index to advertisers.*

WESTERN ELECTRIC CO. New York, Boston, Chicago, and Indianapolis, *see index to advertisers.*

**Wire Draw Plate Manufacturers.**

*F.—Plaques pour Tréfileurs.*

*G.—Drahteisen.*

PALMER WIRE CO. PALMER, MASS. *see index to advertisers.*

MONTGOMERY & CO. 105 Fulton st. New York, *see index to advertisers.*

**Wire Gauge Makers.**

*F.—*

*G.—Draht-Messer.*

PALMER WIRE CO. PALMER, MASS, *see index to advertisers.*

**Wire Manufacturers.**

*F.—Fils (Fab. de).*

*G.—Draht-Fabriken.*

Allen James B. 231 Vine st. Philadelphia, Pa.

AMERICAN ELECTRICAL WORKS, 67 Stewart st. Providence, R.I. *see index to advertisers.*

ANSONIA BRASS & COPPER CO. 19 and 21 Cliff st. New York, *see index to advertisers.*

Balderston H. & Son, 66 G. Calvert st. Md.

Barnum E. T. Detroit, Mich.

Barten Clement, 138 N. 6th st. Philadelphia, Pa.

Bassel V. 326 Manager st, Brooklyn, N. Y.

Bateman Daniel & Sons, Carpenter st. N. Y.

Benedict & Burnham Mfg. Co. (H. C. Agent), 15 Oliver st. Boston, Mass.

Bogen E. E. Prospect & Nend avs. Ohio.

Bonnell J. H. & Co. 24 Cliff st. New York.

Boughan James A. 24 Cliff st. New York.

BRIDGEPORT BRASS CO. 19 Murrietta st. New York, *see index to advertisers.*

Brockner, Evans & Co. 422 West st. N. Y.

Bromhead G. Paterson st. Jersey City, N. J.

Brown & Bros. Waterbury, Conn.

Cable William Excelsior Wire Man Co. 43 Fulton st. New York.

California Wire Works Co. 6 California st. San Francisco, Cal.

Carey & Moen, 234 W. 29th st. New York.

Cary & Mohen, (Mershon & Bancroft, 170 Lake st. Chicago, Ills.

Cary & Niven, 164 Lake st. Chicago, Ills.

Cleveland R. M. Co. 239 Franklin st. Boston.

90 Water st. Cleveland, O. and 91 Chicago, Ills. (N. D. Pratt agent).

Cleveland W. Works, 756 St. Clair st. N. Y.

Cooper, Hewitt & Co. 17 Burling st. N. Y.

Crandal Mfg. Co. E. M. Crandal, 74 W. Eaton, sec. 74 Michigan st. Chicago.

Darby Edward & Sons, 231 Arch st. Philadelphia, Pa.

Davitt & Sons, 1207 Dekalb av. Brooklyn.

Day A. G. 120 Broadway, New York.

Dewitt Wire Mfg. Co. Belleville, N. J.

Dufor & Co. 34 N. Howard st. Baltimore.

Eagleton Mfg. Co. 163 Lake st. Chicago.

Eastwood Wire Mfg. Co. Belleville, N. J.

ELECTRICAL SUPPLY CO. 17 Dey st. New York, *see index to advertisers.*

English Arthur, 133 W. Lake st. Chicago.

Falls Wire Mfg. Co. Cuyahoga Falls, O.

Fennel James P. 36 N. 6th st. Philadelphia.

Fles Frederick, 2451 Ridge av. Philadelphia.

Forman J. 127 South st. Brooklyn, N. Y.

Forsey Wm. S. 10 Old Slip. New York.

Gautier Steel Co. Limited, Philadelphia.

Gilbert & Bennett Mfg. Co. 42 Cliff st. N. Y.

Globe R. M. Co. Cincinnati, Ohio.

Hale B. S. & Son, Malden, Mass.

**Manufacturers—continued.**

Co. 704 Arch st. Philadelphia, Pa.  
 & Raimer, 1340 Vienna st. Phila-  
 Pa.  
 MFG. CO. (agent C. M. Thompson),  
 y st. New York.  
 Fire Co. 816 High st. St. Louis, Mo.  
 Waterbury, Conn.  
 Fire Works (Jonas & Colver), Hartford,  
 h W. E. & Co. 31 Oliver st. Boston,  
 Baker, Columbus, Ohio.  
 G. 219 Bowery, New York.  
 Booth & Haydens (agt. D. F. Urquhart),  
 al st. Boston, Mass.  
 Fire Works, Holyoke, Mass.  
 miss & Co. Leicester, Mass.  
 Morse, 1197 Dekalb av. Brooklyn,  
 97 Court st. Brooklyn, N.Y.  
 453 Scoville av. Cleveland, Ohio.  
 Fire Works, Covington, Ky.  
 Co. Worcester, Mass.  
 & Co. 491 N. 3rd st. Philadelphia,  
 Northampton, Mass.  
 Brother, 461 St. Clair st. Cleveland, O.  
 Co. Olmsted Falls, Ohio.  
 Taylor Wire Co. 219 Market st.  
 is, Mo.  
 John, 109 John st. New York.  
 G. Covington, Ky.  
 P. 200 N. 3rd st. Philadelphia, Pa.  
 I. Detroit, Mich.  
 Co. (Granville Nicholson v. pres. and  
 r.) 36 Dearborn st. Chicago, Ills.  
 n Wire Co. New Haven, Conn. 51 &  
 lle st. Chicago, Ills. (gt. G. L. Poor).  
 & Rope Co. 21 Astor house, New York.  
 . 349 Adams st. Brooklyn, N.Y.  
 365 Ontario st. Cleveland, Ohio.  
 WIRE CO. PALMER, MASS. *see*  
*advertisers.*  
 , William, 202 N. 13th st. Phila-  
 Pa.  
 e Works, 4428 Walnut st. Phila-  
 Pa.  
 ston L. 27 S. 2nd st. Philadelphia, Pa.  
 ia Wire Works, 1340 Vienna st. Phila-  
 Pa.  
 OR BRONZE SMELTING CO. LI-  
 , 512 Arch st. Philadelphia, Pa. *see*  
*advertisers.*  
 . 43 Summer av. Brooklyn, N.Y.  
 Graham J. & Co. 829 Willow st.  
 phia, Pa.  
 . W. & Co. Dwight st. Holyoke, Mass.  
 C. Charlton, Mass.  
 Thomas R. 35 S. 23rd st. Philadelphia,  
 a F. G. 107 John st. New York.  
 Thomas, 1210 Buttonwood st. Phila-  
 Pa.

**Wire Manufacturers—continued.**

ROEBLING JOHN A. SONS CO. Trenton,  
 N.J. 117 Liberty st. New York and San Fran-  
 cisco, Cal.  
 Savidge George W. 4136 Market st. Philadelphia,  
 Pa.  
 Schmitt P. 156 Graham av. Brooklyn, N.Y.  
 Schnabel & Co. 34 S. Canal st. Chicago, Ills.  
 Schweis J. H. 231 Larimer st. Brooklyn, N.Y.  
 Scoville Mfg. Co. 183 Lake st. Chicago, Ills.  
 Sherman & Marsh, 10 Old Slip, New York.  
 Smith Bros. 17 Henry st. Brooklyn, N.Y.  
 Southcomb & Bro. 7 N. Eutaw st. Baltimore, Md.  
 Spencer Wire Co. (treas. R. Sugden) Spencer, Mass.  
 Standard Steel Works, 220 S. 4th st. Phila-  
 delphia, Pa.  
 Staniar & Laffey, 53 Fulton st. New York.  
 Stewart & Co. So Eastern, Pa.  
 Stidman & Co. 16 N. Frederick st. Baltimore, Md.  
 Strawbridg & Chase, 40 N. 6th st. Philadelphia,  
 Pa.  
 Taylor W. & Co. 12 Bratenhall blk. Cleveland, O.  
 THE CHARLES WILLIAMS JR. BRANCH  
 OF THE WESTERN ELECTRIC CO. 109  
 and 115 Court st. Boston, Mass.  
 TILLOTSON L. G. & CO. 5 & 7 Dey st.  
 New York, *see index to advertisers.*  
 Townsend W. P. & Co. 19 Market st.  
 Pittsburgh, Pa.  
 Trenton Iron Co. 17 Burlington st. New York,  
 and 21 N. 4th st. Philadelphia, Pa.  
 Triplex Insulator Wire & Rubber Co. 539 W.  
 24 st. and 10 Cedar st. New York.  
 Union Iron & Steel Co. 5 & 89 Madison st.  
 Chicago, Ills.  
 Wallace & Sons, 89 Chambers & 71 Reade sts.  
 New York.  
 Wallace & Son, Ansonia, Conn.  
 WASHBURN & MOEN MFG. CO. (H. B.  
 Cragin, agent) 107 & 109 Lake st. Chicago,  
 Ills. & 94 Grove st. Worcester, Mass.  
 Watson Thomas, 48 N. Front st. Philadelphia, Pa.  
 Wilmington Wire Works, Wilmington, Del.  
 Worcester Wire Co. Cambridge st. Worcester,  
 Mass.

**Wire Manufacturers—Brass.**

*F.—Fils-Bronze.*

*G.—Draht-Messing.*

ANSONIA BRASS & COPPER CO. 19 and 21  
 Cliff st. New York, *see index to advertisers.*  
 ELECTRICAL SUPPLY CO. 17 Dey st.  
 New York, *see index to advertisers.*  
 Hopkins' New York Steam Wire Works, 90 W.  
 Broadway, New York.  
 HOLMES, BOOTH & HAYDENS, New York,  
 Philadelphia Pa. Waterbury Conn. and  
 London, England.  
 PALMER WIRE CO. PALMER, MASS, *see*  
*index to advertisers.*  
 Plume & Attwood Mfg. Co. (agent H. McRoberts)  
 115 Lake st. Chicago, Ills.

## Wire Manufacturers—Copper.

*F.—Fils de Cuirre (Fab. de).*

*G.—Kupfer-Draht.*

AMERICAN ELECTRICAL WKS. 67 Stewart  
ts. Providence, R.I. *see index to advertisers.*  
ANSONIA BRASS & COPPER CO. 19 and 21  
Cliff st. New York. *see index to advertisers.*  
Benedict & Burnham Mnf. Co. 13 Murray st.  
New York and Waterbury, Conn.  
ELECTRICAL SUPPLY CO. 17 Dey st.  
New York. *see index to advertisers.*  
HOLMES, BOOTH & HAYDENS, New York,  
Boston, Mass. Philadelphia, Pa. Waterbury,  
Conn. and London, England.  
PALMER WIRE CO. PALMER, MASS. *see*  
*index to advertisers.*  
Plume & Atwood Manufacturing Co. (agent H.  
McRoberts), 115 Lake st. Chicago, Ills.

## Wire Manufacturers—Covered.

*F.—Fils recouverts.*

*G.—Umspannener Draht.*

AMERICAN ELECTRICAL WORKS, 67  
Stewart st. Providence, R.I. *see index to adver-*  
*tisers.*  
ANSONIA BRASS & COPPER CO. 19 and 21  
Cliff st. New York. *see index to advertisers.*  
ELECTRICAL SUPPLY CO. 17 Dey st.  
New York. *see index to advertisers.*  
HOLMES, BOOTH & HAYDENS, New York,  
Philadelphia, Pa. Waterbury, Conn. and Lon-  
don, England.

## Wire Manufacturers—Galvanized Iron.

*F.—Fils de fer.*

*G.—Eiserner-Draht.*

ELECTRICAL SUPPLY CO. 17 Dey st.  
New York. *see index to advertisers.*  
Iefferts, Marshall & Co. 90 Beekman & 495  
Cherry sts. New York.  
PALMER WIRE CO. PALMER, MASS. *see*  
*index to advertisers.*  
ROEBLINGS J. A. SONS CO. Trenton, N.J.  
New York and San Francisco, Cal.

## Wire Manufacturers—German Silver.

*F.—Fils de laiton.*

*G.—Draht—Alfenide.*

ELECTRICAL SUPPLY CO. 17 Dey st.  
New York. *see index to advertisers.*

## Wire Manufacturers—Insula

*F.—Fils-isolés.*

*G.—Isolirter Draht.*

AMERICAN ELECTRICAL WKS. 67  
st. Providence, R.I. *see index to advert*  
ANSONIA BRASS & COPPER CO.  
Cliff st. New York, *see index to advert*  
DAY A. G. (agent Clark B. Hotchkiss) 11  
way, New York, *see index to advertiser*  
ELECTRICAL SUPPLY CO. 17 Dey  
York, *see index to advertisers.*  
HOLMES, BOOTH & HAYDENS, N  
Boston, Mass. Philadelphia, Pa. W  
Conn. and London, England.  
MOORE, A. F. 200 & 202 N. 3rd st. Phi  
Pa. *see index to advertisers.*  
Triplex Insulated Wire & Rubber Co  
24th and 10 Cedar sts. New York.

## Wire Manufacturers—Iron and

*F.—Fils de fer et d'acier.*

*G.—Draht—Eisen und Stahl.*

ELECTRICAL SUPPLY CO. 17  
New York, *see index to advertisers.*  
Long Island Wire & Iron Works, 349  
Brooklyn, N.Y.  
PALMER WIRE CO. PALMER, M  
*index to advertisers.*  
ROEBLINGS J. A. SONS CO. Trent  
New York and San Francisco, Cal.

## Wire Manufacturers—Phosphor

*F.—Fils de phosphore-bronze.*

*G.—Draht—Phosphor-Bronze.*

PHOSPHOR BRONZE SMELTI  
512 Arch st. Philadelphia, Pa. *see*  
*advertisers.*

## Wire Manufacturers—Telegr

*F.—Fils de télégraphie.*

*G.—Telegraphen-Draht.*

ELECTRICAL SUPPLY CO. 17  
New York, and Ansonia, Conn. *see*  
*advertisers.*  
ANSONIA BRASS & COPPER CO.  
Cliff st. New York.  
Hazard Manufacturing Co. 87 Li  
New York.  
HOLMES, BOOTH & HAYDENS, N  
Philadelphia, Pa. Waterbury, Conn.  
don, England.  
PALMER WIRE CO. PALMER, M  
*index to advertisers.*



**Manufacturers—Telephone.**

*F.—Fils pour téléphones.*

*G.—Draht-Telephonen.*

AN ELECTRICAL WORKS, 67  
t. Providence, R.I. *see index to adver-*

AN SPIRAL TELEPHONE WIRE  
Milk st. Boston Mass.

A BRASS & COPPER CO. 19 & 21  
New York, *see index to advertisers.*

J. (agent Clark B. Hotchkiss) 120 Broad-  
ew York, *see index to advertisers.*

ICAL SUPPLY CO. 17 Dey st.  
ork, and Ansonia, Conn. *see index to*  
*ers.*

D MNFG. CO. (agent, C. M.  
son) 87 Liberty st. New York.

3, BOOTH & HAYDENS, New York,  
lphia, Pa. Waterbury, Conn. and  
1, England.

3 WIRE CO. PALMER, MASS. *see*  
*advertisers.*

NGS J. A. SONS CO. Trenton,

E. S. & Co. New Haven, Conn.

1 & Co. New Haven, Conn.

**Wire Staples Manufacturers.**

3 WIRE CO. PALMER, MASS., *see*  
*advertisers.*

**Wire Workers and Weavers.**

*F.—Tréfileurs.*

*G.—Draht-Fabriken.*

3 WIRE CO. PALMER, MASS. *See*  
*advertisers.*

NGS J. A. SONS CO. Trenton, N.J.  
ork and San Francisco, Cal.

**Zinc Manufacturers.**

*F.—Zinc (Fab. de).*

*G.—Zink-Fabrikanten.*

Bergen Point Zinc Co. 13 Burling st. New York,  
and Bayonne, N.J.

Crocker Bros. & Son, 11 Broad st. Boston, Mass.

Devoc F. W. & Co. Fulton and William sts.  
New York.

Eagle Zinc Works, Hatchmaker, Cincinnati, O.

Edes O. Hart L. & Co. Plymouth, Mass.

Illinois Zinc Co. Peru, Ills.

Kinsman, Gundy & Perry, La Salle st, Chicago,  
Ills.

Kremer J. 25 Jesse st. San Francisco, Cal.

Lehigh Co. Bethlehem, Pa.

Lehigh Zinc Co. 333 Walnut st. Philadelphia, Pa.

Lehigh Zinc & Iron Co. Limited, 13 Platt st.  
New York.

Lund A. G. 98 N Wells st. Chicago, Ills.

McDonagh William & Co. 189 Front st. New York.

Manning & Squeer, 113 Liberty st. New York.

Mathicosen & Hegeler, La Salle st, Chicago, Ills.

Mercer Zinc Works. Trenton, N.J.

Meyerscieck M. & Co. Cincinnati, O.

Missouri Zinc Co. J. M. R. R. St. Louis, Mo.

N. J. Zinc Co. Fort Richards, N.J.

N. J. Zinc & Iron Co. 61 Maiden la. New York.

NORTHROP A. C. Waterbury, Conn. *see index*  
*to advertisers.*

Osgood F. & Co. 13 Burling st. New York.

Pacific Zinc Ore Factory, 569 Mission st. San  
Francisco, Cal.

PALMER WIRE CO. PALMER, MASS.

Passaic Zinc Co. Jersey City, N.J. & 113 Liberty  
st. New York.

Schweizer J. 54 Metro av. Brooklyn, N.Y.

Seelig M. J. & Co. 115 Manager st. Brooklyn, N.Y.

Stole J. A. 588 Grand st. Brooklyn, N.Y.

Warren Bros. 47 W Lake st. Chicago, Ills.

Wellenberg Henry, 7 Thompson st. New York.

Wilhelm A. & Co. 221 Poplar st. Reading, Pa.

Wood N. & Co. Plymouth, Mass.

**Zinc Rod Manufacturers.**

*F.—*

*G.—Verfertiger von Zinkstäben.*

ANSONIA BRASS & COPPER CO. 19 & 21  
Cliff st. New York, *see index to advertisers.*

## OFFICIAL LIST OF RAILWAY PURCHASING AGENTS

OF THE

## UNITED STATES AND CANADA.

SHOWING ROAD, PURCHASING AGENT AND ADDRESS.

In this list it is intended to give the name and address of all persons having charge of the purchase of supplies. On many roads this duty is performed by officers who are not designated by the "Purchasing Agent." These officials are included in this list, and are designated as follows: † President, ‡ Receiver, \* General Manager, † General Superintendent, Master Mechanic.

Adirondack \*C. E. Durkee, Saratoga Springs, N. Y. Alabama Central Inv. E. Tennessee, Va. & Ga. \*John M. B. Seama, Ala. Alabama Great Southern, R. W. Healy, Cincinnati, O. Albert \*G. A. Robinson, Hillsborough, N. C. Allegheny Central \*W. O. Chapman, Friendship, N. Y. Allegheny Valley \*David McCargo, Pittsburgh, Pa. Anna & Little Rock—\*A. C. Wilkinson, Alma, S. C. Anderson, Lebanon & St. Louis \*J. A. Larned, And. Ind. Annapolis & Elk Ridge—Wm. H. Burns, Baltimore, Md. Arizona Central \*Samuel A. Hensley, Phoenix, Ariz. Arkansas-Midland \*A. H. Johnson, Helena, Ark. Asheville & Spartanburg \*J. Anderson, Spartanburg, S. C. Ashland Coal & Iron Robert Peckham, Ashland, Ky. Ashland & Madison \*J. Madison, Springfield, Mo. Ashtabula & Pittsburgh W. M. Munn, Pittsburgh, Pa. Atchison, Topeka & Santa Fe Frank M. Smith, Topeka, Kan. Atlanta & West Point \*L. E. Grant, Atlanta, Ga. Atlanta & North Georgia F. C. Roberts, New N. C. Atlantic, Gulf & W. I. Truss \*D. E. Maxwell, Fernandina, Fla. Atlanta, Tennessee & Ohio \*Gormley, Charlotte, N. C. Atlantic & Pacific—D. B. Sibley, Chicago, Ill. Atlantic & French Broad—\*W. J. Edgefield, S. C. Augusta & Knoxville—\*E. F. Verdery, Augusta, Ga. Austin & Northwestern \*A. L. Rhoads, Austin, Tex.

Baltimore & Ohio—N. S. Hill, Baltimore, Md. Baltimore & Potomac & Alexandria & Fredericksburg \*W. H. Baltimore, Md. Bangor & Piscataquis \*Arthur Brown, Bangor, Me. Bangor & Katahdin Iron Works \*F. Crum, Bangor, Me. Bangor & Portland \*C. Miller, Blairstown, N. J. Barclay Jno. A. Hardenburgh, York, N. Y. Batesville & Brinkley R. B. Davis, Brinkley, Ark. Bath & Hammondsport \*A. M. W. Hammondsport, N. Y. Bay of Quinte R. & Nav. Co.—\*R. C. Carter, Deseronto, Can. Bedford Springs Owensburgh & Bloomfield J. W. Kennedy, Bedford Ind. Bellare, Zanesville & Cin. \*S. I. M. Woodfield, O. Bellefonte & Snow Shoe \*Daniel Rhoads, Bellefonte, Pa. Bell's Gap \*Robert Bellwood, Pa. Bennington & Rutland \*E. C. White, Bennington, Vt. Barstow \*J. D. Van, Kansas. Baden, Columbus & Florida Walter Thorburn, Wilmington, N. C. Bodie & Benton R. & Com. Co. \*Thos. Bodie, Cal. Boston & Albany \*W. H. Barnes, Boston, Mass. Boston, Lowell & Concord F. H. Nourse, Boston, Mass. Boston & Maine M. P. Wood, Boston, Mass. Boston & New York Air Line R. N. Dowd, New H. Conn. Boston & Providence \*A. A. Folsom, Boston, Mass. Boston, Barre & Gardner \*Henry M. W. Worcester, Mass. Boston, Concord, Montreal White Mountains & Mt. W. Br. Co. W. Storer, Boston, Mass. Boston, Hoosac Tunnel & Wn. \*C. H. Cory, Mechanicsville, N. Y. Boston, Revere Beach & Lynn \*A. H. Boston, Mass. Boston, Winthrop & Ft. Shirley \*C. A. Purser, Boston, Mass. Bowling Green \*W. A. W. Bowling Green, O. Bradford Eldred & Co. R. G. Taylor, Bradford, Pa. Bradford J. H. Pook, Tiffin, O. Bradford, Burdell & Kinzua \*B. C. Williams, Bradford, Pa. Breakwater & Frankford \*J. L. Mape, Bath, N. B. Brighthope E. B. Flaw, Richmond, Va. Brooklyn, Bath & Coney Island \*Geo. A. Gauthier, Bath, Brunswick & Western—W. K. Wallace, Brunswick, Ga. Bucksport & Bangor \*L. L. Lincoln, Bangor, Me. Buffalo & Southwestern \*John F. Moulton, Buffalo, N. Y. Buffalo, New York & Phila. \*J. H. Pook, Buffalo, N. Y. Buffalo, Pittsburgh & Western \*O. Watson, Oil City, Pa. Burlington & Lamelle \*D. C. Lansley, Burlington, Vt. Burlington & Missouri River in Nebraska \*J. M. Barr, Omaha, Neb. Burlington & Northwestern, & R. & W. Western \*John T. Cherry, Burlington, Iowa. Burlington & Southwestern \*J. W. Smith, Burlington, Vt. Burlington Cedar Rapids & N. \*Theo. Stickney, Cedar Rapids, Iowa. Burlington & Ohio River \*George I. St. Louis, Mo.

Cairo & St. Louis \*Chas. Hamilton, St. Louis, Mo. Cairo & Vincennes G. H. Lyman, Cairo, Ill. California \*Lyman Bridges, San Francisco, Cal. California Northern \*A. J. Bunney, Marysville, Cal. California \*J. W. Victor, National City, Cal. Cam. & At. & P. M. & Marl \*M. Bernard, Camden, N. J. Can. & N. B. \*J. P. Michelson, Camden, N. J. Canada Atlantic \*D. C. Lindsey, Ottawa, Can. Canadian Pac. G. Shaughnessy, Montreal, Can. Cape Girardeau Southwestern W. H. Wheeler, Cape Girardeau, Mo. Cape & Yaquina Valley James S. Morrison, Elyetteville, N. C. Carillon & Greenville \*R. W. Shepherd, Greenville, N. C. Quebec Carolina Central \*John C. Winder, Raleigh, N. C. Carson & Colorado \*C. P. Mason, Carson, N. C. Catskill & Feglesville \*C. W. Chapman, Catskill, Pa. Catskill Mountain Chas. A. Dea, Catskill, N. Y. Central of South Carolina \*J. S. Simmons, Charleston, S. C. Central & Montgomery \*J. A. Lee, Montgomery, Ala. Central Ontario \*G. W. McMullen, Peterborough, Ont. Central Iowa W. E. Coppock, Marshalltown, Iowa. Central of Illinois D. P. Phelps, Monmouth, Ill. Central R. & B. Co. of Georgia C. R. Carson, Savannah, Ga. Central of New Jersey B. W. Barnett, 119, Liberty-street, N. Y. Central Pacific J. R. Watson, Sacramento, Cal. Central Vermont \*J. M. Fess, St. Albans, Vt. Chattahoochee \*Chas. H. Rockwell, Ashland, Ky. Chas. & Pa. Southern \*Wm. Hutchings, Chagrin Falls, O. Charleston & Savannah E. P. M. Sweeney, Charleston, S. C. Charlotte, Columbia & Augusta \*J. P. Minetree, Richmond, Va. Chateaugay \*A. I. Logan, Plattsburgh, N. Y. Chatham \*J. B. Snowball, Chatham, N. B. Cheraw & Chester G. R. Talcott, Chester, S. C. Cher & Del. & Sallis \*John F. Divine, Wilmington, N. C. Chesapeake, Ohio & S. W. H. E. Huntington, E. E. Chesapeake & Ohio A. S. Emmons, Richmond, Va. Chesapeake & H. H. Stone, Keene, N. H. Chester & James Mason, Chester, S. C. Chester, Iron Mountain & Western \*C. B. Cole, Chester, Ill. Chicago & V. Hartwell, Chicago, Ill. Chicago & Rock Coal \*A. F. Reesh, Veedersburg, Ind. Chicago, Burlington & City Geo. C. Smith, Chicago, Ill. Chicago, Burlington & Quincy Geo. C. Smith, Chicago, Ill. Chicago & Western Theo. Stickney, Cedar Rapids, Iowa. Chicago & Eastern Illinois D. R. Patterson, Chicago, Ill. & Grand Trunk Albert Judd, Ft. Gratiot, Mich. Chicago & Iowa \*W. H. Holcomb, Rockford, Ill. Northwestern R. W. Hauger, Chicago, Ill. Chicago & West Michigan E. Hall, Muskegon, Mich. Western Indiana \*E. W. Parker, Chicago, Ill. Chicago, Milwaukee & St. Paul \*J. I. Crocker, Milwaukee, Wis. Chicago, Pekin & Southwestern \*A. H. Crocker, Joliet, Ill. Chicago Rock Island & Pacific F. A. Mason, Ill. Chicago, Saginaw & Canada \*John A. Elwell, St. Louis, Mich. Chicago, St. Louis & New Orleans dated with Illinois Central, q. v. Chicago & Indianapolis Air Line Thomas H. Hiner, Bensenville, Ill. St. Paul, Minneapolis & Omaha W. H. S. Wright, St. Paul, Minn. Cincinnati, Columbus & Hocking Val. Gunterling, Dayton, O. Cincinnati & Eastern \*Geo. H. Wilber, Cincinnati, O. Cincinnati, Green, Portsmouth \*M. Simmons, Cincinnati, O. Cincinnati, Green River & Nashville \*A. C. Sage, Kings E. Station, Ky. Cincinnati, Hamilton & Dayton J. L. Yale, Cleveland, O. Cincinnati, Hamilton & La. J. L. Yale, Cleveland, O. Cincinnati, Indianapolis, St. Louis & Chicago Geo. Jozzer, Cincinnati, O. Northern \*G. L. Barringer, Cincinnati, O. Cincinnati & Ohio River \*A. J. Warner, Marietta, O. N. O. & Tex. Pacific \*W. Healy, Cincinnati, O. Cincinnati, Lebanon & Chicago J. L. Yale \*C. A. Cincinnati & Southeastern \*J. V. Patton, Newport, Ky. Cincinnati, Seama & Mo. H. I. Wright, Cincinnati, N. O. & Tex. Pacific—E. W. Healy, Cincinnati, O. Cincinnati, Van Wert & Mt. Vernon R. J. Cox, Cincinnati, O. Cincinnati, Washburn & Mich. \*Norman Beckley, Elkhart, Ind. Clarksville Weston & Delany \*F. M. La. Western, W. Va. Cleveland Akron & Cambridge N. Mousarrat, Akron, O. Cleveland, Danbury & S. Burgeon, Danbury, O. Cleveland, Indiana & St. Louis \*J. A. Larned, Anderson, Ind. Cleveland & Marietta Woodford, Toledo, O. Cleveland & Pittsburgh William Mullins, Pittsburgh, Pa. Cleveland, Columbus & Indianapolis J. L. Yale, Cleveland, O. Cleveland, Mt. Vernon & Del. \*N. Mousarrat, Mt. Vernon, Cleveland, Painesville & Ashtabula—\*W. E. Lewis, Cleveland, O. Cleveland, Tuscarawas Valley & W.

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Iowa & Nevada Telephone Co. (Ames, Iowa.)—Nevada, Iowa.  
Chicago & Root (Lyons Iowa.)—Mount Carroll, Morrison, Ill.; De Witt, Iowa.  
State Telephone Co. (Lowell, Mass.)—Acton, Concord, Maynard, Athol, Brookfield, Clinton, Framingham, Gardner, Winchendon, Greenfield, Holliston, Hopkinton, Marlboro' Milford, Natick, North Adams, Northampton, Orange, Palmer, Pittsfield, Southbridge, Spencer, Springfield, Holyoke, Chicopee, Walpole, Webster, Westboro' Westfield, Mass.  
Hunt & Hunt (West Winsted, Conn.)—Winsted, Conn.  
Telephone Co. of Buffalo, (Buffalo, N.Y.)—Akron, Albion, Batavia, Buffalo, Dansville, Geneseo, Lockport, Niagara Falls, Rochester, Warsaw, N.Y.  
Telephone Co. of Missouri (St. Louis, Mo.)—Belleville, Ill.; St. Louis, Mo.  
Telephone Co. of Philadelphia (Philadelphia, Penn.)—Wilmington, Del.; Atlantic City, Camden, Trenton, Woodbury, Chester, Coatesville, Philadelphia, Pottstown, Penn.  
Telephone Co. of New Mexico (Las Vegas, New Mexico.)—Albuquerque, Las Vegas, Santa Fé, Silver City, Socorro, New Mexico.  
Hills Telephone Exchange Co. (Deadwood, D.T.)—Deadwood, D.T.  
Iowa & Northern Telephone Co. (Lowell, Mass.)—Ayer, Gloucester, Haverhill, Lawrence, Lynn, Newburyport, Salem, Mass.; Claremont, Concord, Dover, Exeter, Franklin, Great Falls, Lebanon, Lisbon, Littleton, Nashua, Portsmouth, N.H.; Bellows Falls, Bennington, Randolph, Springfield, St. Johnsbury, Woodstock, Vt.  
Marlboro' Telephone Exchange (Brattleboro' Vt.)—Brattleboro', Wilmington, Vt.  
Wm. A. C. (Montpelier, Vt.)—Montpelier, Morrisville, Vt.  
Keye Telephone Co. (Middletown, Ohio.)—Lebanon, Middletown, Xenia, Ohio.  
Burlington Telephone Co. (Burlington, Iowa.)—Burlington, Ft. Madison, Iowa.  
Central District & Printing Telegraph Co. (Pittsburg, Penn.)—Bellaire, East Liverpool, Marietta, Martins Ferry, Steubenville, Ohio; Allegheny City, Franklin, McKeesport, Meadville, Newcastle, Oil City, Pittsburgh, Titusville, Penn.; Parkersburg, Wheeling, W. Va.  
Central New York Telephone & Telegraph Co. (Utica, N.Y.)—Herkimer, Little Falls, Norwich, Oneida, Ogdensburg, Oneonta, Rome, Utica, Watertown, N.Y.  
Central Pennsylvania Telephone & Supply Co. (Williamsport, Penn.)—Altoona, Bellefonte, Bloomsburg, Clearfield, Driftwood, Emporium, Huntingdon, Lewistown, Lock Haven, Mifflintown, Milton, Phillipsburgh, Renevo, Shamokin, Williamsport, Penn.  
Central Telephone Co. (Chicago, Ill.)—Albion, Alton, Beardstown, Belvidere, Bloomington, Canton, Cairo, Carthage, Centralia, Champaign, Clinton, Danville, Decatur, Delavan, Dixon, Effingham, Elmwood, El Paso, Fairfield, Flora, Galena, Galesburgh, Galva, Geneseo, Gibson City, Greenville, Havana, Jacksonville, Jerseyville, Kankakee, Lacon, Lincoln, Litchfield, Macomb, Marshall, Mattoon, McLeansborough, Mendota, Monmouth, Monticello, Mount Carmel, Mount Sterling, Mt. Vernon, Nashville, Newton, Oquawka, Pana, Paris, Pekin, Petersburg, Peoria, Pittsfield, Polo, Pontiac, Princeton, Robinson, Rushville, Shelbyville, Springfield, Streator, Sullivan, Sycamore, Taylorville, Toledo, Toulon, Tuscola, Watseka, Winchester, Ill.; Anderson, Bedford, Bloomington, Brazil, Cambridge City, Columbus, Connersville, Crawfordville, Delphi, Frankfort, Franklin, Greencastle, Greenfield, Hartford City, La Porte, Lebanon, Madison, Martinsville, Muncie, New Castle, Noblesville, Orleans, Richmond, Rockville, Rushville, Salem, Spencer, Terre Haute, Tipton, Williamsport, Ind.; Defiance, Sandusky, Ohio.







# **J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.**

**New York & Pennsylvania Telephone & Telegraph Co.** (New York, N.Y.)—Bath, Binghamton, Bolivar, Corning, Dunkirk, Elmira, Forestville, Hornellsville, Ithaca, Jamestown, Mayville, Oswego, Richburg, Watkins, Waverly, N.Y.; Bradford, Corry, Towanda, Troy, Warren, Penn.

**Northern New York Telephone & Telegraph Co.** (Troy, N.Y.)—Chaplain, Malone, Plattsburg, Port Henry, N.Y.

**North Pennsylvania Telephone Co.** (Scranton, Penn.)—Hazleton, Pittston, Scranton, Wilkes-Barre, Penn.

**Northwestern Telephone Exchange Co.** (Minneapolis, Minn.)—Bismarck, Fargo, Dak.; Moorhead, Brainerd, Faribault, Fergus Falls, Mankato, Minneapolis, St. Paul, Red Wing, St. Cloud, Stillwater, Wabasha, Winona, Minn.

**Ogden Telephone Exchange Co.** (Ogden City, Utah.)—Logan, Ogden City, Provo City, Utah.

**Ohio Valley Telephone Co.** (Louisville, Ky.)—Jeffersonville, New Albany, Ind.; Louisville, Ky.

**Pacific Bell Telephone Co.** (San Francisco, Cal.)—Tucson, Arizona; Anaheim, Fresno, Los Angeles, Martinez, Oakland, Sacramento, San Diego, San Francisco, San José, Santa Cruz, Stockton, Cal.; Eureka, Virginia City, Nev.; Portland, Oregon; Seattle, Walla Walla, W. Terr'y.

**Peekskill Telephone Co.** (Peekskill, N.Y.)—Peekskill, N.Y.

**Pennsylvania Telephone Co.** (Harrisburg, Penn.)—Allentown, Bangor, Bethlehem, Carlisle, Chambersburg, Columbia, Easton, Harrisburg, Lancaster, Lebanon, Mauch Chunk, Pottsville, Reading, York, Penn.

**Plymouth & Campton Telephone Exchange Co.** (Plymouth, N.H.)—Plymouth, N.H.

**Providence Telephone Co.** (Providence, R.I.)—Hope Valley, Pascoag, Providence, R.I.

**Red Oak Telephone Co.** (Red Oak, Iowa)—Red Oak, Iowa.

**Shirley, Henry G.** (Marion, Ohio)—Marion, Ohio.

**Southwestern Dakota Telephone & Telegraph Co.** (Yankton, Dak.)—Huron, Mitchell, Pierre, Sioux Falls, Watertown, Yankton, Dak.

**Southern Bell Telephone & Telegraph Co.** (197, Broadway, New York, N.Y.)—Birmingham, Gadsden, Huntsville, Mobile, Montgomery, Selma, Ala.; Cedar Keys, Fernandina, Gainesville, Jacksonville, Fla.; Sioux Falls, Watertown, Yankton, Dak.; Key West, Pensacola, Fla.; Albany, Augusta, Athens, Atlanta, Brunswick, Columbus, Macon, Rome, Ga.

**Southern Bell Telephone & Telegraph Co.** (197, Broadway, New York, N.Y.)—Savannah, Thomasville, Ga.; Charlotte, New Bern, Raleigh, Wilmington, N.C.; Charleston, Columbia, Georgetown, Greenville, Newberry, Orangeburg, S.C.; Alexandria, Danville, Lynchburg, Norfolk, Petersburg, Portsmouth, Richmond, Staunton, Va.; Charleston, Mason, W. Va.

**Southern Massachusetts Telephone Co.** (New Bedford, Mass.)—Bridgewater, Brockton, Fall River, Hyannis, New Bedford, Taunton, Mass.

**Southwestern Telegraph & Telephone Co.** (Little Rock, Ark.)—Fort Smith, Helena, Hot Springs, Little Rock, Texarkana, Ark.; Austin, Brenham, Cleburne, Corpus Christi, Corsicana, Dallas, Denison, El Paso, Fort Worth, Gainesville, Galveston, Houston, Marshall, Palestine, Paris, San Antonio, Sherman, Tyler, Waco, Waxahatchie, Texas.

**Stump, W. S.** (Nevada, Mo.)—Nevada, Mo.

**Suburban Telephone Co.** (Boston, Mass.)—Brookline, Cambridge, Charlestown, Chelsea, Dorchester, East Boston, Hyde Park, Jamaica Plain, Malden, Medford, Milton, Newton, Quincy, Somerville, Waltham, Woburn, Mass.

**Sullivan Telephone Exchange Co.** (Sullivan, Ind.)—Sullivan, Ind.

**Telephone & Telegraph Construction Co.** (Detroit, Mich.)—Adrian, Alpena, Ann Arbor, Battle Creek, Big Rapids, Calumet, Cadillac, Charlotte, Cheboygan, Coldwater, Detroit, East Saginaw, Bay City, Saginaw City, Flint, Grand Haven, Grand Rapids, Greenville, Hancock, Hesperia, Hillsdale, Holly, Houghton, Howell, Hudson, Ionia, Ishpeming, Jackson, Kalamazoo, Lansing, Lapeer, Ludington, Manchester, Manistee, Marquette, Menominee, Midland, Monroe, Montague, Whitehall, Mt. Clemens, Muskegon, Negaunee, Nawaygo, Niles, Pontiac, Port Huron, Richmond, Romeo, St. Clair, Stanton, St. Joseph, Ben Harbor, Terunseh, Three Rivers, Ypsilanti, Mich.

**Telephone Exchange Co.** (Baltimore, Md.)—Baltimore, Cumberland, Frederick, Hagerstown, Md.

**Utah Telephone Co.** (Salt Lake City, Utah.)—Salt Lake City, Utah.

**Valley City Telephone Exchange Co.** (Valley City, Dak.)—Valley City, Dak.

**Western Telephone Co.** (Chicago, Ill.)—La Salle, Ottawa, Quincy, Rockford, Rock Island, Moline, Ill.; Davenport, Iowa; Indianapolis, Kokomo, La Fayette, Loganport, Marion, Michigan City, Peru, South Bend, Ind.; Cedar Rapids, Des Moines, Dubuque, Keokuk, Ottumwa, Iowa.

**Winnebago Bell Telephone Co.** (Laconia, N.H.)—Laconia, N.H.

**Winter Bros.** (Kingston, N.Y.)—Kingston, Rondout, N.Y.

**Wisconsin Telephone Co.** (Milwaukee, Wis.)—Appleton, Beloit, Berlin, Chippewa Falls, Eau Claire, Delavan, Fond du Lac, Green Bay, Janesville, La Crosse, Madison, Manitowish, Marinette, Merrill, Milwaukee, Menasha, Neenah, Oconto, Oshkosh, Racine, Sheboygan, Stevens Point, Waukesha, Wausau, White Water, Wis.

**Wyoming Telephone & Telegraph Co.** (Cheyenne, Wyoming Territory)—Cheyenne, Laramie City, Wyo. Ter.

**Telephone Despatch Company** (Boston, Mass.)—Boston, Mass.

## **L I C E N S E E S**

**FOR THE SUPPLY OF TELEPHONES FOR PRIVATE LINES AND OTHER PURPOSES.**

**Ch & Root**, Lyons, Iowa. **Bay State Telephone Co.**, Lowell, Mass. **Beach & Hunt**, West Winsted, Conn. **Bell Telephone Co. of Buffalo**, Buffalo, N.Y. **Bell Telephone Co. of Missouri**, St. Louis, Mo. **Bell Telephone Co. of New Mexico**, Las Vegas, New Mex. **Bell Telephone Co. of Philadelphia**, Philadelphia, Penn. **Boston & Northern Telephone Co.**, Lowell, Mass. **Brattleboro' Telephone Exchange**, Brattleboro' Vt. **Brower, H. C. & Son**, Syracuse, N.Y. **Brown, A. C.**, Montpelier, Vt. **Buckeye Telephone Co.**, Middletown, Ohio. **Burlington Telephone Co.**, Burlington, Iowa.

**Central District & Printing Telegraph Co.**, Pittsburg, Penn. **Central New York Telephone & Telegraph Co.**, Utica, N.Y. **Central Pennsylvania Telephone & Supply Co.**, Williamsport, Penn. **Central Telephone Co.**, Chicago, Ill. **Cheshire County Telephone Co.**, Keene, N.H. **Chicago Telephone Co.**, Chicago, Ill. **City & Suburban Telegraph Association**, Cincinnati, Ohio. **Clapp, Clement L.**, Carrollton, Ill. **Cleveland Telephone Co.**, Cleveland, Ohio. **Colorado Telephone Co.**, Denver, Col. **Commercial Telephone Co. of Albany**, Albany, N.Y. **Commercial Telephone Company of Troy**, Troy, N.Y. **Connecticut Telephone Co.**, New Haven, Conn. **Cozzens & Bull**, Newport, R.I. **Cumberland Telephone & Telegraph Co.**, Nashville, Tenn.

**Danbury Telephone Despatch Co.**, Danbury, Conn. **Danville Telephone Co.**, Danville, Ind.

**Empire State Telephone Co.**, New York, N.Y. **Empire State Telephone & Telegraph Co.**, Auburn, N.Y. **Engle, George B., Jr., & Co.**, Cedar Rapids, Iowa.

**Freeport Telephone Exchange Co.**, Freeport, Ill.

**Glenwood Telephone Exchange Co.**, Glenwood, Iowa. **Gold & Stock Telegraph Co.**, New York, N.Y. **Granite State Telephone Co.**, Manchester, N.H.

**Hickok, R. G. & Co.**, Peacedale, R.I. **Hickok, J. S.**, Vergennes, Vt. **Hudson River Telephone & Telegraph Co.**, New York, N.Y.

**Iowa Telephone & Telegraph Co.**, Ogden City, Utah. **Ingham, Glidden & Downs**, Lowell, Mass. **Iowa & Minnesota Telephone Co.**, Dubuque, Iowa. **Iowa Telephone & Telegraph Co.**, Davenport, Iowa.

**Joplin Telephone Co.**, Joplin, Mo. **Joplin Telephone Co.**, Carthage, Mo.

**Kansas Telephone Co.**, New Orleans, La.

**Merchants' Telephone & Telegraph Co. of Kansas & Missouri**, Kansas City, Mo. **Metropolitan Telephone & Telegraph Co.**, New York, N.Y. **Midland Telephone Co.**, Chicago, Ill. **Missouri & Kansas Telephone Co.**, Kansas City, Mo.

**National Bell Telephone Co. of the State of Me.**, Lowell, Mass. **National Capital Telephone Co.**, Washington, D.C. **Nebraska Telephone Co.**, Omaha, Neb. **New York & Pennsylvania Telephone & Telegraph Co.**, New York, N.Y.

**North Pennsylvania Telephone Co.**, Scranton, Penn. **Northwestern Telephone Exchange Co.**, Minneapolis, Minn.

**Ohio Valley Telephone Co.**, Louisville, Ky.

# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVER

Pacific Bell Telephone Co., San Francisco, Cal. Peekskill Telephone Co., Peekskill, N Y Pennsylvania Tel  
Harrisburgh, Penn Post & Co., Cincinnati Ohio Providence Telephone Co., Providence, R I  
Red Oak Telephone Co., Red Oak Iowa Rolfe H P, Fort Benton, Montana  
Southern Dakota Telephone & Telegraph Co., Yankton, Dak Southern Bell Telephone & Telegraph Co.,  
N Y Southern Massachusetts Telephone Co., New Bedford, Mass Southwestern Telegraph & Tel  
Little Rock, Ark Storke, H L., New York, N Y Suburban Telephone Co., Boston, Mass Sullivan  
Exchange Co., Sullivan, Ind  
Telephone & Telegraph Construction Co., Detroit, Mich. Telephone Exchange Co., Baltimore, Md.  
Utah Telephone Co., Salt Lake City, Utah  
Western Telephone Co., Chicago, Ill Wilmot, W H, Lambertville, N J Winter Brothers, Kingston, N Y.  
Telephone Co., Milwaukee, Wis Wyoming Telephone & Telegraph Co., Cheyenne, Wyo. Ter

## EXTRA-TERRITORIAL LINES.

Balch & Root Lyons, Iowa Clinton, Iowa, to Morrison, Ill. Clinton, Iowa, to Mt Carroll, Ill. Clinton  
DeWitt, Iowa DeWitt, Ia, to Davenport, Ia, Morrison, Ill, to Mount Carroll, Ill, Morrison, Ill, to  
Mt Carroll, Ill, to Polo, Ill Bay State Telephone Co Lowell, Mass Ayer, Mass, to Boston, Mass  
Mass to Springfield, Mass Fitchburg, Mass, to Gardner, Mass Holyoke, Mass to Northampton, Ma  
ford, Mass to Providence, R I Orange, Mass, to Gardner, Mass Pittsfield, Mass, to North Adams  
Princeton, Mass to Worcester, Mass Southbridge, Mass, to Worcester, Mass So Framingham Mass  
Mass, So Framingham, Mass, to East Douglas, Mass So Framingham, Mass, to Lowell Mass  
Mass, to Westfield, Mass Worcester, Mass, to Lowell Mass Bell Telephone Co of Buffalo, Buff  
Buffalo, N Y, to Akron, N Y Buffalo, N Y, to Lockport, N Y Buffalo, N Y, to Niagara Falls N Y  
N Y, to Rochester, N Y Lockport, N Y, to Rochester, N Y Rochester, N Y, to Danville N Y  
N Y, to Gettysburg, N Y Bell Telephone Co of Missouri St Louis, Mo St Louis, Mo, to Alton, Ill  
Mitchell, Ill, St Louis, Mo, to St Charles, Mo St Louis, Mo, to Alton, Ill, via Collinsville Ill  
Mo, to Belleville, Ill St Louis, Mo, to Highland, Ill Boston & Northern Telephone Co Lowell  
Boston, Mass, to Salem, Mass Salem Mass, to Gloucester, Mass, Salem, Mass, to Lawrence, Mass  
Mass, to Haverhill, Mass Salem, Mass, to Portsmouth, N H Lawrence, Mass, to Lowell Mass  
Mass, to Nashua, N H Lawrence, Mass, to Concord, N H Lawrence, Mass, to Haverhill Mass  
Mass, to Nashua, N H Haverhill Mass, to Rochester, N H Haverhill, Mass, to Exeter N  
buryport, Mass to Haverhill, Mass Exeter, N H, to Great Falls, N H Exeter, N H, to  
N H Exeter N H, to North Hampton, N H Exeter, N H, to Newburyport, Mass Nashua N  
Mass Buckeye Telephone Co Middletown, Ohio Lebanon, Ohio, to Cincinnati, Ohio Lebanon, Ohio  
Ohio, Middletown, Ohio, to Hamilton, Ohio Middletown, Ohio, to Lebanon, Ohio Xenia Ohio, to Dayton  
Central District & Printing Telegraph Co Pittsburg, Penn Meadville, Penn, to Titusville Penn Warren  
Girard, Ohio Central New York Telephone & Telegraph Co Utica, N Y Oneida N Y, to  
Central Pennsylvania Telephone & Supply Co Williamsport, Penn Altoona, Penn, to Hunting  
Bloomsburg, Penn, to Wilkesbarre Penn Philipsburgh, Penn, to Altoona, Penn Philipsburgh, Penn  
field, Penn Shannock Penn, to Pottsville Penn Williamsport Penn to Lock Haven Penn W  
Penn, to Milton, Penn Central Telephone Co Chicago, Ill Alton, Ill, to St Louis Mo via Collinsville  
Alton, Ill, to St Louis, Mo, via Mitchell, Ill Anderson, Ind, to Indianapolis, Ind Anderson Ind,  
Ind, Anderson, Ind, to Noblesville, Ind Belvidere, Ill, to Garden Prairie, Ill Belvidere, Ill, to Rock  
Bloomington, Ill, to Chicago, Ill Bloomington, Ill, to Clinton, Ill Bloomington, Ill, to Gibson  
Bloomington, Ill, to Lincoln Ill Bloomington Ill, to Pontiac, Ill Bloomington, Ill, to Peoria Ill,  
City, Ind, to Eaton, Ohio Cambridge City, Ind, to Rushville, Ind Canton, Ill, to Macon, Ill  
Peoria, Ill Carthage, Ill, to Keokuk, Ia, Centralia, Ill, to Mt Vernon, Ill Centralia, Ill, to Na  
Columbus Ind, to Seymour, Ind Columbus Ind, to Shelbyville, Ind Connersville, Ind to Anderson  
Crawfordsville, Ind to Lebanon Ind, Danville, Ill, to Hoopeson Ill, Danville, Ill, to La Porte, Ind  
to Clinton Ill Decatur, Ill, to Hammond, Ill Delavan, Ill, to Mason City, Ill Delphi, Ind to  
Ind Delphi, Ind to Logansport, Ind Daxon, Ill, to Morrison, Ill Fowler, Ind, to La Fayette, Ind  
fort, Ind, to Keokuk, Ind Frankfort, Ind, to La Fayette, Ind Franklin, Ind, to Indianapolis Ind  
Ind, to Columbus, Ind Frankfort, Ind, to Lebanon, Ind Galena, Ill, to Dubuque, Ia Greenbush  
Monmouth, Ill, Coatesburg, Ia, to Peoria, Ia, Geneseo, Ill, to Davenport, Ia, Geneseo, Ill, to  
Greencastle Ind, to Indianapolis Ind Greencastle, Ind, to Terre Haute Ind Hartford City Ind, to  
Ind Hartford City, Ind to Marion, Ind Hartford City, Ind, to Portland Ind Hartford City Ind,  
City, Ind Highland Ill, to St Louis, Mo Jacksonville Ill, to Winchester Ill, Kankakee, Ill, to O  
La Port, Ind to Morgan City, Ind La Porte Ind, to South Bend, Ind Lebanon, Ind to Indiana  
Lincoln Ill, to Decatur Ill, Lincoln, Ill, to Peoria, Ill Marshall, Ill, to Terre Haute, Ind Mart  
to Frankfort Ind Martinsville Ind to Indianapolis Ind Mattoon, Ill, to Chicago Ill Mattoon  
Paris Ill, Mendota, Ill, to La Salle Ill Mendota, Ill, to Princeton, Ill, Mendota Ind, to  
Mt Sterling, Ill, to Quincy Ill Mendota, Ind to Anderson Ind Newastle Ind to Anderson Ind  
Ind to Cambridge City Ill Noblesville, Ind, to Indianapolis Ind via Castleton Noblesville Ind,  
apolis, Ind via Nora Noblesville, Ind, to Keokuk, Ind, Paris, Ill, to Terre Haute Ind Peoria,  
Paso, Ill Peoria, Ill, to Havana, Ill Peoria, Ill, to Lacon Ill Peoria, Ill, to Fulton, Ia Petersburg  
Beardstown, Ill Polo, Ill, to Dixon Ill Polo, Ill, to Mt Carroll Ill Polo, Ill, to Rockford Ill  
to Joliet, Ill Princeton Ill, to La Salle, Ill Richmond, Ind, to Greenville, Ohio Richmond Ind, to  
Ind Rushville, Ind to Hamilton, Ohio Rushville Ind, to Indianapolis Ind Rushville, Ind to  
Ind Sandusky, Ohio, to Evamont Ohio Sandusky Ohio, to Newark, Ohio Springfield Ill, to  
Springfield Ill, to Decatur Ill Springfield, Ill, to Jacksonville Ill Springfield, Ill, to La Porte, Ia,  
Ill, to Petersburg Ill Springfield Ill, to Taylorville, Ia Streator Ill, to Ottawa Ill Streator  
Pontiac Ill, Terre Haute Ind to Sullivan Ind Chicago Telephone Co Chicago Ill Chicago,  
waukee Wis Elgin, Ill to Garden Prairie Ill Joliet, Ill to Pontiac Ill Geneseo Lake Wis  
City & Suburban Telegraph Association Cincinnati, Ohio Cincinnati, Ohio, to Dayton Ohio Cincinnati  
Georgetown, Ohio Cincinnati, Ohio, to Hillsborough Ohio Cincinnati, Ohio, to Lebanon Ohio  
to Eaton Ohio Haverhill Ohio, to Rushville Ind Cleveland Telephone Co Cleveland, Ohio  
Lakewood Ohio Columbus Telephone Co Denver, Col Denver, Col, to Grand City Col Denver  
Boulder Co, Gunnison City Col to Crested Butte, Col Connecticut Telephone Co New Haven  
Haven, Conn, to Derby Conn, Meriden Conn, to Middletown Conn New London Conn, to Nor  
Canaan & Bull Newport RI Newport RI, to Fall River Mass Cumberland Telephone & Tel  
Nashville, Tenn Chattanooga, Tenn, to Murfreesboro, Tenn, Knoxville, Ky, to Dayton, Ky Evansville  
Hannover Ind Evansville Ind, to Madisonville Ky Evansville Ind, to Mount Vernon Ind Evansville  
to Owensboro Ky Evansville Ind to Evansville Ind Evansville Ind to Princeton Ind Evansville  
Rockport Ind Evansville Ind to Vincennes Ind Graham Tenn, to Bowling Green Ky Nashville  
Dixon Springs, Tenn Henderson Ky, to Union Ky Jackson, Tenn, to Lexington Tenn Lebanon  
to Alexandria Tenn Lebanon Tenn, to Carroll Tenn Madisonville Ky, to Hopkinsville Ky  
Ind, to Clinton Ill, Mt Vernon Ind, to Shawneetown Ill, Mt Vernon Ind, to Uniontown Ky  
borough Tenn, to Shelbyville Tenn Nashville Tenn, to Columbia Tenn Nashville Tenn, to  
Nashville, Tenn, to Hopkinsville Ky Nashville Tenn, to Lebanon, Tenn Nashville Tenn, to  
Lebanon Tenn Nashville Tenn, to Springfield Tenn Princeton Ind, to Petersburg Ind Princeton  
Petersburg Ind Lockport Ind, to Le Roy Ind Uniontown Ky, to Cassville, Ky  
Empire State Telephone & Telegraph Co Auburn, N Y Auburn, N Y, to Syracuse, N Y, Fulton, N Y,  
N Y, Oswego, N Y to Fulton N Y  
Freeport Telephone Exchange Co Freeport, Ill Freeport, Ill, to Rockford, Ill



# A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

rd, R. G., 2d, (Peacedale, R.I.)—South Kingston, R.I., to Providence, R.I. Hudson River Telephone & Telegraph Co. (New York City, N.Y.)—Poughkeepsie, Fishkill & Newburgh, N.Y.

State Telephone Co. (Providence, R.I.)—Boston, Mass., to Providence, R.I. Iowa & Minnesota Telephone Co. (Dubuque, Iowa.)—Le Mars, Iowa, to Sioux City, Iowa; Manchester, Ia., to Dubuque, Ia.; Marshalltown, Ia., to Montezuma, Ia. Iowa Telephone & Telegraph Co. (Davenport, Iowa) Anamosa, Ia., to Cedar Rapids, Ia.; Fort Dodge, Ia., to Dakota, Ia.; Independence, Ia., to Waterloo, Ia.; Independence, Ia., to Cedar Rapids, Ia.; Indianola, Ia., to Des Moines, Ia.; Iowa City, Ia., to Davenport, Ia.; Montezuma, Ia., to Marshalltown, Ia.; Muscatine, Ia., to Davenport, Ia.; Newton, Ia., to Des Moines, Ia.; Oskaloosa, Ia., to Indianola, Ia.; Vinton, Ia., to Cedar Rapids, Ia.; Winterset, Ia., to Des Moines, Ia.

on County Bell Telephone Co. (Maquoketa, Iowa)—Maquoketa, Iowa, to Bellevue, Iowa; Maquoketa, Iowa, to Sabula, Iowa. Johnson, Lenson (Vincennes, Ind.)—Greensburg, Ind., to Shelbyville, Ind.; Seymour, Ind., to Columbus, Ind.; Shelbyville, Ind., to Columbus, Ind.; Shelbyville, Ind., to Indianapolis, Ind.; Vincennes, Ind., to Bloomfield, Ind.; Vincennes, Ind., to Evansville, Ind.; Vincennes, Ind., to Olney, Ill.; Vincennes, Ind., to Washington, Ind.; Washington, Ind., to Petersburg, Ind.

ille Telephone Co. (Leadville, Col.)—Denver, Col., to Leadville, Col. Louisiana Telephone Co. (New Orleans, La.)—Port Hudson, La., to Woodville, Miss.

his Telephone & Electric Co. (Memphis, Tenn.)—Memphis, Tenn., to Holly Springs, Miss.; Memphis, Tenn., to Friar's Point, Miss. Merchant's Telephone & Telegraph Co. of Kansas & Missouri Kansas City, Mo.: Kansas City, Mo., to Leavenworth, Kan. Michigan Bell Telephone Co. (Detroit, Mich.) Adrian, Mich., to Hillsdale, Mich.; Adrian, Mich., to Toledo, Ohio; Ann Arbor, Mich., to Howell, Mich.; Ann Arbor, Mich., to Manchester, Mich.; Ann Arbor, Mich., to Milan, Mich.; Battle Creek, Mich., to Kalamazoo, Mich.; Detroit, Mich., to Port Huron, Mich.; Detroit, Mich., to Adrian, Mich.; Detroit, Mich., to Ann Arbor, Mich.; Detroit, Mich., to Toledo, Ohio; Detroit, Mich., to Flint, Mich.; Detroit, Mich., to Jackson, Mich.; Detroit, Mich., to Lansing, Mich.; Detroit, Mich., to Pontiac, Mich.; Detroit, Mich., to Port Huron, Mich.; Detroit, Mich., to St. Clair, Mich.; East Saginaw, Mich., to Caro, Mich.; East Saginaw, Mich., to Midland, Mich.; Flint, Mich., to East Saginaw, Mich.; Grand Rapids, Mich., to Holland, Mich.; Grand Rapids, Mich., to Howard City, Mich.; Grand Rapids, Mich., to Ionia, Mich.; Grand Rapids, Mich., to Montague, Mich.; Grand Rapids, Mich., to Muskegon, Mich.; Grand Rapids, Mich., to Newaygo, Mich.; Hillsdale, Mich., to Coldwater, Mich.; Ionia, Mich., to Carson City, Mich.; Ionia, Mich., to Stanton, Mich.; Jackson, Mich., to Battle Creek, Mich.; Jackson, Mich., to Charlotte, Mich.; Jackson, Mich., to Lansing, Mich.; Kalamazoo, Mich., to Allegon, Mich.; Kalamazoo, Mich., to Paw Paw, Mich.; Kalamazoo, Mich., to Three Rivers, Mich.; Lansing, Mich., to Ionia, Mich.; Lapeer, Mich., to Flint, Mich.; Montague, Mich., to Hart, Mich.; Muskegon, Mich., to Montague, Mich.; Muskegon, Mich., to Newaygo, Mich.; Mt. Clemens, Mich., to Lapeer, Mich.; Newaygo, Mich., to Big Rapids, Mich.; Newaygo, Mich., to Hesperia, Mich.; Niles, Mich., to South Bend, Ind.; Pontiac, Mich., to Lapeer, Mich.; Pontiac, Mich., to Milford, Mich.; Port Huron, Mich., to Lapeer, Mich.; Port Huron, Mich., to Sandusky, Mich.; Port Huron, Mich., to Mt. Clemens, Mich.; St. Clair, Mich., to Mt. Clemens, Mich.; St. Joseph, Mich., to Niles, Mich. Midland Telephone Co. (Chicago, Ill.)—Akron, Ohio, to Canton, Ohio; Akron, Ohio, to Cleveland, Ohio; Alliance, Ohio, to Canton, Ohio; Ashtabula, Ohio, to Painesville, Ohio; Bellefontaine, Ohio, to Kenton, Ohio; Bellefontaine, Ohio, to Sidney, Ohio; Bluffton, Ind., to Decatur, Ind.; Bluffton, Ind., to Hartford City, Ind.; Bellefontaine, Ohio, to Urbana, Ohio; Chillicothe, Ohio, to Circleville, Ohio; Columbus, Ohio, to Circleville, Ohio; Columbus, Ohio, to Delaware, Ohio; Columbus, Ohio, to Lancaster, Ohio; Columbus, Ohio, to Marysville, Ohio; Columbus, Ohio, to Newark, Ohio; Culumbus, Ohio, to Sunbury, Ohio; Dayton, Ohio, to Eaton, Ohio; Dayton, Ohio, to Cincinnati, Ohio; Dayton, Ohio, to Greenville, Ohio; Dayton, Ohio, to Springfield, Ohio; Dayton, Ohio, to Xenia, Ohio; Eaton, Ohio, to Hamilton, Ohio; Elkhart, Ind., to South Bend, Ind.; Fort Wayne, Ind., to Bluffton, Ind.; Fort Wayne, Ind., to Warsaw, Ind.; Freemont, Ohio, to Sandusky, Ohio; Gallion, Ohio, to Bucyrus, Ohio; Gallipolis, Ohio, to Pomeroy, Ohio; Georgetown, Ohio, to Cincinnati, Ohio; Greenville, Ohio, to Richmond, Ind.; Hillsborough, Ohio, to Bainbridge, Ohio; Hillsborough, Ohio, to Cincinnati, Ohio; Huntington, Ind., to Fort Wayne, Ind.; Kenton, Ohio, to Lima, Ohio; Lima, Ohio, to Middletown, Ohio; Lima, Ohio, to Van Wert, Ohio; Mansfield, Ohio, to Ashland, Ohio; Mansfield, Ohio, to Gallion, Ohio; Mansfield, Ohio, to Norwalk, Ohio; Mount Vernon, Ohio, to Mansfield, Ohio; Northwalk, Ohio, to Fremont, Ohio; Norwalk, Ohio, to Sandusky, Ohio; Oberlin, Ohio, to Cleveland, Ohio; Painesville, Ohio, to Cleveland, Ohio; Piqua, Ohio, to Greenville, Ohio; Port Clinton, Ohio, to Freemont, Ohio; Portland, Ind., to Hartford City, Ind.; Portland, Ind., to Winchester, Ind.; Portsmouth, Ohio, to Ironton, Ohio; Ravenna, Ohio, to Akron, Ohio; Ravenna, Ohio, to Cleveland, Ohio; Springfield, Ohio, to Columbus, Ohio; Springfield, Ohio, to Dayton, Ohio; Springfield, Ohio, to Urbana, Ohio; Tiffin, Ohio, to Fremont, Ohio; Toledo, Ohio, to Adrain, Mich.; Toledo, Ohio, to Bowling Green, Ohio; Toledo, Ohio, to Detroit, Mich.; Toledo, Ohio, to Fremont, Ohio; Union City, Ind., to Greenville, Ohio; Union City, Ind., to Hartford City, Ind.; Urbana, Ohio, to Piqua, Ohio; Wabash, Ind., to Huntington, Ind.; Wabash, Ind., to Marion, Ind.; Wabash, Ind., to Peru, Ind.; Wabash, Ind., to North Manchester, Ind.; Warren, Ind., to Marion, Ind.; Warsaw, Ind., to No. Manchester, Ind.; Warsaw, Ind., to Plymouth, Ind.; Washington, C. H., Ohio, to Circleville, Ohio; Washington C. H., Ohio, to Wilmington, Ohio; Wilmington, Ohio, to Hillsborough, Ohio; Winchester, Ind., to Union City, Ind.; Wooster, Ohio, to Ashland, Ohio; Wooster, Ohio, to Maumillon, Ohio; Youngstown, Ohio, to Girard, Ohio; Youngstown, Ohio, to Ravenna, Ohio; Youngstown, Ohio, to Sharon, Penn. Missouri & Kansas Telephone Co. (Kansas City, Mo.)—Canton, Mo., to Monticello, Mo.; Canton, Mo., to Quincy, Ill.; Hannibal, Mo., to Quincy, Ill.; St. Joseph, Mo., to Atchison, Kan. Montana Telephone & Telegraph Co. (Ogden City, Utah.) Helena Mont., to Butte City, Mont.

nal Bell Telephone Co. of the State of Me. (Lowell, Mass.) Bath Me., to Lewiston, Me.; Portland, Me., to Lewiston, Me.; Portland, Me., to Portsmouth, N.H.; Portland, Me., to Skowhegan, Me. National Capital Telephone Co. (Washington, D.C.)—Washington, D.C., to Laurel, Md. Nebraska Telephone Co. Omaha, Neb. - Fremont, Neb. to Columbus, Neb.; Lincoln, Neb., to Crete, Neb.; Omaha, Neb., to Blair, Neb.; Omaha, Neb., to Fremont, Neb.; Omaha, Neb., to Plattsmouth, Neb.; Omaha, Neb., to Seward, Neb.; St. Paul, Neb., to Grand Island, Neb. New York & Pennsylvania Telephone & Telegraph Co. (New York, N.Y.)—Bath, N.Y., to Hornellsville, N.Y.; Bradford, Penn., to Richburgh, N.Y.; Mayville, N.Y., to Jamestown, N.Y. North Pennsylvania Telephone Co. Scranton, Penn.—Wilkesbarre, Penn., to Bloomsburg, Penn. North Western Telephone Exchange, Co. Minneapolis, Minn.—Minneapolis, Minn., to Minnetrista, Minn.; St. Paul, Minn., to Stillwater, Minn.; St. Paul, Minn., to Winona, Minn.

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ylvania Telephone Co. (Harrisburgh, Penn.)—Easton, Penn., to Allentown, Penn.; Mauch Chunk, Penn., to Allentown, Penn.; Mauch Chunk, Penn., to Hazleton, Penn.; Pottsville, Penn., to Shamokin, Penn.; Reading, Penn., to Lebanon, Penn.; Reading, Penn., to Pottstown, Penn.; Reading, Penn., to Pottsville, Penn. Pioneer Telephone Co. (Lowell, Mass.)—Boston, Mass., to Lowell, Mass. Providence Telephone Co. (Providence, R.I.)—Providence, R.I., to Milford, Mass.; Providence, R.I., to Pascoag, R.I.; Providence, R.I., to Warren, R.I.; Providence, R.I., to South Kingston, R.I.

ern Bell Telephone & Telegraph Co. (New York, N.Y.)—Petersburg, Va., to Richmond, Va. Southern Massachusetts Telephone Co. (New Bedford, Mass.)—Brockton, Mass., to Boston, Mass.; Fall River, Mass., to Newport, R.I.; Fall River, Mass., to Taunton, Mass.; Fall River, Mass., to Warren, R.I.; Harwichport, Mass., to Provincetown, Mass.; New Bedford, Mass., to Chatham, Mass.; New Bedford, Mass., to Fall River, Mass.; New Bedford, Mass., to Taunton, Mass.; Taunton, Mass., to Brockton, Mass.; Wareham, Mass., to Bridgewater, Mass.; Wareham Mass., to Woods Holl, Mass. Southwestern Telegraph & Telephone Co. (Little Rock Ark.)—Dallas, Texas, to Cleburne, Texas. Sullivan Telephone Exchange Co. (Sullivan, Ind.)—Sullivan, Ind., to Terre Haute, Ind.

Telephone Co. (Salt Lake City, U.T.)—Salt Lake City, U.T., to Ogden City, U.T.

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## J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERT

Ind., La Fayette, Ind., to Delphi, Ind., La Fayette, Ind., to Fowler, Ind., La Fayette, Ind., to Frankfort, La Fayette, Ind., to Mendota, Ill., La Salle, Ill., to Princeton, Ill., Logansport, Ind., to Delphi, Ind., La Fayette, Ind., to Kokomo, Ind., Logansport, Ind., to Monticello, Ind., Marion, Ind., to Anderson, Ind., Marion, Ind., to Hartford City, Ind., Marion, Ind., to Kokomo, Ind., Marion, Ind., to Warsaw, Ind., Marion, Ind., to Ind., Ottawa, Ill., to Streator, Ill., Peru, Ill., to Tipton, Ill., Peru, Ind., to Warsaw, Ind., Peru, Ind., to Ind., Peru, Ind., to Logansport, Ind., Peru, Ind., to Marion, Ind., Quincy, Ill., to Canton, Mo., Quincy, Ind., to Hannibal, Mo., Quincy, Ill., to Mt. Sterling, Ill., Rockford, Ill., to Fox, Ill., Rockford, Ill., to Rockford, Ill., to Rockford, Ill., Rockford, Ill., to Freeport, Ill., South Bend, Ind., to Fort Wayne, Ind., to La Porte, Ind., South Bend, Ind., to Niles, Mich., Wisconsin Telephone Co., Milwaukee, Wis., to Rockford, Ill., Milwaukee, Wis., to La Crosse, Wis., Milwaukee, Wis., to Waukegan, Wis., Oshkosh, Wis., to Green Bay, Wis., Oshkosh, Wis., to Fond-du-Lac, Wis., Platteville, Wis., to Dubuque, Iowa, Telephone & Telegraph Co., Cheyenne, Wyo. Terry, Cheyenne, Wyo. Terry, to Laramie City, Wyo. Terry.

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**WIRE AND STOCK TELEGRAPH COMPANY,** 61 and 195 Broadway, 185 Fifth-avenue, and 8, Dey-street, collects and distributes Commercial News, Market Quotations, &c., to all parts of the United States and Canada. NORVIN GREEN, President. Technical and Engineering Department.—GEORGE B. SCOTT, Superintendent; CHAS. S. H. SMALL, Assistant Superintendent; ARTHUR V. WALDRON, Chief Operator; D. BRYCE SCOTT, Chief Inspector; GEO. E. SCOTT, Chief of Construction; MICHAEL BRESLIN, Chief Batteryman. Commercial News Department.—EDWIN F. LUDWIG, Superintendent; D. L. LUDWIG, Assistant Superintendent; J. H. TOWNSEND, Manager; GEO. M. SCHUSTER, Chief of the Operating Department.

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**INTERNATIONAL OCEAN TELEGRAPH COMPANY,** Western Union Building, 195, Broadway, New York City. Capital, \$3,000,000. NORVIN GREEN, President. T. ECKERT, Vice-President, CHARLES F. ESTEE, Secretary, R. H. ROCHESTER, Treasurer. G. B. VAN ECKLEY, Auditor. Directors: NORVIN GREEN, AUGUSTUS SCHILL, HARRISON D. ROBERT C. LIVINGSTON, JAY GOULD, THOMAS T. ECKERT, GEORGE G. GOULD, JOHN VAN RUSSELL, SAGE. Land Lines, from Lake City, Florida, to Punta Rassa, Florida, two Submarine Cables from Punta Rassa, Florida, to Key West, Florida, two Submarine Cables from Key West, Florida, to Havana, Cuba. Tariff, 50 cents per word, New York to Havana. 10 letter limit does not apply on these lines.

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**LOUISIANA TELEPHONE COMPANY,** Louisiana and Mississippi. Executive Office, 47, Camp-street, New Orleans. JOHN N. BORINGER, President, W. BORINGER, Vice-President and General Manager, W. W. HUCK, Secretary and Treasurer. New Orleans, La.

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**MANHATTAN DISTRICT TELEGRAPH COMPANY.** Executive Office, New York, and 37, Vesey-street, New York. Officers: W. H. WOODVERTON, President, H. W. WOODVERTON, Vice-President and General Manager, H. W. CHAPMAN, Treasurer. Directors: W. H. WOODVERTON, H. W. PEPE, HENRY G. PRINCE, HENRY W. GOWLAND, A. S. BUSH. District Office, 66, Exchange-place, 127, Broadway, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200. Other convenient offices will soon be opened. Messenger, Fire Police and Night Watchmen. Instruments connected in residences, stores, hotels, &c. without charge.

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**MEXICAN CENTRAL TELEGRAPH AND TELEPHONE COMPANY,** Temple-court, New York. F. M. DELANO, President; GEO. M. BLANCHARD, Secretary and Treasurer.

**MEXICAN NORTHERN TELEPHONE COMPANY,** Temple-court, New York, F. K. KAIN, President; G. S. CARRINGTON, Vice-President; ALVAN TENNEY, Secretary and Treasurer.

**MEXICAN PACIFIC TELEPHONE COMPANY.** Executive Offices, 95, Milk-street, Boston, Mass. E. B. WELCH, President; ALEX. L. HAYES, Secretary and Treasurer; L. E. ALLEN, General Manager, Mazatlan, Mexico. The Company has exchanges in Mazatlan, Colima, Tepic, Rosario, Noria, Guaymas, and Hermosillo, also La Paz and Trimfo, Lower California.

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**MEXICAN TELEPHONE COMPANY,** 12, Sears-buildings, Boston, Mass. T. C. BRYANT, Secretary; WM. REED, Treasurer; F. B. BEAUMONT, President; G. I. WILEY, City of Mexico, Manager.

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**MISSOURI PACIFIC RAILWAY COMPANY.** Telegraph Department, Sedalia, Mo. L. F. SHELTON, Superintendent of Telegraph.

**"ORSE" UNDERGROUND CONDUIT COMPANY,** No. 220, South Third-street, Philadelphia. Capital, \$2,500,000. Shares, \$5.00 each. All stock full paid and non-assessable. Working Capital, 160,000 Shares of par value of \$800,000. ALBERT H. MERSHON, President; FREDERICK W. HAMMETT, Vice-President; HIRAM J. KEELER, Secretary; EDWIN LOUDERBACK, Treasurer. Board of Directors—Albert H. Mershon, Philadelphia; Frederick W. Hammett, Philadelphia; Edwin Louderback, Philadelphia; George B. Mershon, Philadelphia; Augustus P. Blomer, Philadelphia; Jacob Fox, Philadelphia; Wm. Passmore Hoopes, Philadelphia; Alfred S. Elliot, Wilmington, Del.; Edwin R. Cochran, Middletown, Del. Bankers, Fidelity Insurance, Trust and Safe Deposit Company, Philadelphia.

**MUTUAL UNION TELEGRAPH COMPANY.** Western Union Lease  
Executive Office, No. 133, Broadway, New York. J. G. Moore, President, CHAS.  
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**NATIONAL TELEGRAPH COMPANY.** The Capital Stock is fixed at \$10,000,000 with the provision that it may be increased to \$10,000,000. The Stockholders are C. Brice, Lima, O., Frank E. Worcester, Brooklyn, and John W. Simpson, Herbert L. Walter Katto and James E. Childs, New York.

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**NEW YORK AND PENNSYLVANIA TELEPHONE AND TELEGRAPH COMPANY,** 195, Broadway, New York. P.O. Box, 3284

**NORTH-WESTERN BELL TELEPHONE COMPANY OF CLINTON,** J. C. Root, Secretary, Lyons, Iowa. J. K. P. Balch, President, Clinton, Iowa. at Morrison, Ill., Sterling, Ill., Mt. Carroll, Ill., LaMar, Ill., De Witt, Iowa. Jefferson, Iowa, De Witt, Iowa, to Clinton, Iowa. De Witt, Iowa to Dixon, Ill. De Witt, Iowa, to Mequokela, Min., Morrison, Ill., to Clinton, Iowa. Mt. Carroll, Ill., to Sterling, Ill., to Dixon, Ill. Mt. Carroll, Ill., to Polo, Ill. Mt. Carroll, Ill. Clinton and Lyons Bell Telephone Company, Exchange at Clinton, Ill.

**PACIFIC BELL TELEPHONE COMPANY.** Office, No. 222, Sanson Street, San Francisco, Cal. GEORGE S. LAND, President, M. GREENWOOD, Treasurer. H. L. VICE-President, J. I. SABIN, Superintendent.

**PENNSYLVANIA TELEPHONE COMPANY.** General Office, Harrisburg. FRANCIS JORDAN, President, WM. KIRK, General Manager. M. H. BURNIER, Secretary and Treasurer. P.O. Box, 123.

**POSTAL TELEGRAPH COMPANY.** Organized under the Laws of the State of New York, June 21st, 1881. Capital Stock, 210,000 shares \$100 each. First Mortgage, 6% 30 year Gold Bonds, \$10,000,000. Officers: JOHN W. MACKAY, President, HENRY COMINS, New York, Vice-President. H. L. HORTON, New York, Treasurer. Directors—George D. Roberts, New York. George S. Coe, New York, C. C. Carr, New York. William K. Souther, New York. George S. Hart, New York. A. Boston. Ford W. Peck, Chicago. E. L. Gillette, Chicago. W. H. Folsom, General Superintendent of Construction, George R. Williamson, Secretary and Auditor. K. Assistant General Superintendent, J. H. Erickson, District Superintendent, New York. Parker, District Superintendent, Chicago. Electricians—F. W. Cushing, New York. E. Taylor, New York. C. H. Ruld, Chicago. J. Hemmings, Manager, New York. P. Flood, Chief Operator, New York Office. L. O. M. Pearson, Manager, Chicago. General Offices, No. 49, Broadway, New York. Working in connection with the Cable Co. Mackay-Bennett.

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**TELEPHONE AND TELEGRAPH CONSTRUCTION COMPANY**, No. 68, Griswold-street, Detroit, Mich. G. W. BALCH, President; HUGH McMILLAN, Secretary and Treasurer; W. A. JACKSON, General Manager; G. A. McKINLOCH, Auditor and Cashier.

**TIME TELEGRAPH COMPANY**, Temple-court, 5 and 7, Beekman-street, New York. CALVIN GODDARD, President; CHESTER H. POND, Vice-President and General Manager; JOHN H. SEED, Treasurer; B. S. CLARK, Secretary. Trustees—Hon. Henry Howard, Providence; Hon. Alexander H. Rice, Boston; Hon. Jas. R. Hawley, Hartford; Calvin Goddard, New York; Chester H. Pond, New York; James Hamblett, New York; Samuel Elliott, New York; John Seed, New York; James F. Sutton, New York. This Company now own and control *Forty-eight* United States Patents, covering every feature and branch of Electric Time Service. Is prepared to furnish isolated plants for Public Buildings, Hotels and Residences, or complete systems for cities and towns. Correspondence solicited. Any parties infringing any of the Company's patents are respectfully notified that they will be prosecuted to the full extent of the law.

**TROPICAL AMERICAN TELEPHONE COMPANY, LIMITED.** Capital, \$400,000. 40,000 shares, \$10 each. Principal Office, 95, Milk-street, Boston, Mass, U.S.A. Officers and Directors—H. S. RUSSELL, President; J. H. HOWARD, Vice-President; CHAS. W. JONES, Secretary and Treasurer. Directors—H. S. Russell, of Boston; F. M. Delano, of New York; Nathan Appleton, of Boston; Chas. Williams, Jr., of Boston; J. H. Howard, of Boston; J. D. Haines, of New York; Chas. W. Jones, of Boston. Stock Transfer Office, Long Branch Banking Company, Long Branch, N.J. T. C. Morford, Cashier, Transfer Agent.

**UNION METROPOLITAN TELEGRAPH COMPANY**, in connection with the Western Union Telegraph Company. Offices located at the main Business Centres in the City, principal Hotels, &c. Messages sent promptly to all points at lowest rates. Superintendent's Office, City Hall, Cleveland, Ohio. J. P. ABERNETHY, Superintendent.

**UNITED PRESS.** General Offices, 187, Broadway, New York. CHAS. H. TAYLOR (*Boston Globe*), President; CHAS. R. BALDWIN (*Waterbury American*), Treasurer; ROBERT CAMPE (*Pittsburg Telegraph*), Secretary; WALTER H. PHILLIPS, General Manager. P.O. Box 216.

**UNITED STATES TELEPHONE MANUFACTURING COMPANY.** Office 64, Cedar-street, New York City. S. D. SCHUYLER, New York, President; G. R. WILLIAMS, New York, Secretary and Treasurer; JAS. G. SMITH, New York, General Manager. Counsel—Alexander & Green, New York; Hon. Roscoe Conkling, New York; General Samuel A. Duncan (late U. S. Commissioner of Patents), New York; Causten Browne, Boston, Mass.; Ex-Governor Ingersoll, New Haven, Conn.; John S. Beach, New Haven, Conn.; Chas. E. Mitchell, New Britain, Conn.; Wm. D. Baldwin, Washington, D.C. Experts—William Cleveland Hicks (U. S. Government Expert), New York; Edward S. Renwick, New York; Henry C. Townsend (late Chief Examiner U. S. Patent Office), New York; John E. Earle, New Haven, Conn. Some of the prominent Capitalists interested—Jesup, Paton & Co., Bankers, New York; Hatch & Foote, Bankers, New York; D. Willis James (of Phelps Dodge & Co.), New York; General Horace Porter (President of N. Y., West Shore and Buffalo R. R.), New York; Chas. G. Franklyn (late of Cunard S. S. Co.), New York; General Edward F. Winslow (President N. Y., Ont. and Western R. R. Co.), New York; A. S. Barnes (of A. S. Barnes & Co.), New York; Henry Day, New York; Jno. Cress, Chicago, Ills.; D. W. Minshall, Terre Haute, Ind.; Jos. Collett, Terre Haute, Ind.

**UNITED STATES UNDERGROUND TELEGRAPH COMPANY.** SAMUEL A. WOOD, President; JOSEPH G. SWEZEY, Secretary. Office, 69, William-street, New York, U.S.A. Are now operating under the Woodward System.

**UNITED TELEPHONE COMPANY.** E. T. GILLILAND, President; W. B. CLARK, Vice-President; C. D. CRANDALL, Secretary and Treasurer; E. L. SMITH, General Superintendent; P. W. BOSSANT, Superintendent Kan., Div.; CHAS. W. McDANIEL, Superintendent Mo., Div.

**WEST INDIA TELEGRAPH AND TELEPHONE COMPANY, LIMITED** Capital Stock—\$250,000. J. P. DIETER, President, Chillicothe, Ohio; ALBERT DOUGLASS, Jr., Secretary; C. H. McNEILL, Treasurer; T. C. MORFORD, Registrar of Transfers, Long Branch, New Jersey. PRESTON C. NASON, Electrician and General Manager. San Juan, Porto Rico. Cable Address, "Nason."



**WESTERN UNION TELEGRAPH COMPANY.** List of Officers and Directors of the Western Union Telegraph Company, Western Union Buildings, 195, Broadway, New York City, 1883. Capital, \$80,000,000. Operates in connection with the Great North Western Telegraph Company of Canada; the Central, South American, and Mexican and Governmental Telegraph Companies of South America; the Mutual Union (leased lines); the International Ocean Telegraph Company; and the American Bell Telephone Company; all the principal lines in the Western Continent, and reaching by telegraph or telephone every city, town, or village in the Western Continent. By its contracts with the Consolidated Cable Companies, the Western Union Telegraph Company handles all business passing to and from Europe and America. **NORVIN GREEN**, President; **THOMAS T. ECKERT**, Vice-President and General Manager; **AUGUSTUS SCHELL**, **HARRISON DURKEE**, **JOHN VAN HORNE**, Vice-Presidents; **D. H. BATES**, Acting Vice-President and Assistant General Manager; **J. B. VAN EVERY**, Acting Vice-President and Auditor; **A. R. BREWER**, Secretary; **R. H. ROCHESTER**, Treasurer; **CLARENCE CARY**, Attorney. Board of Directors—**Norvin Green**, **C. M. Fry**, **A. B. Graves**, **Thomas L. Eckert**, **John Van Horne**, **Augustus Schell**, **R. H. Rochester**, **D. H. Bates** and **Henry Hewitz**. Executive Committee—**Norvin Green**, **Thomas T. Eckert**, **John Van Horne**, **Augustus Schell**, **Harrison Durkee**, **Geo. J. Gould**, **Jay Gould**, **Russell Sage**, **Alonzo B. Cornell**, **Sidney Dillon**, **Cyrus W. Field**. Eastern Division General Superintendent—**Charles A. Tinker**, New York. Eastern Division District Superintendents—**W. C. Humstone**, New York; **R. T. Clinch**, St. John, N.B.; **Thomas Roche**, Boston, Mass.; **G. W. Gates**, White River Junct., Vt.; **S. B. Gifford**, Syracuse, N. Y.; **J. E. Zeublin**, Philadelphia, Pa.; **W. J. Holmes**, New York; **Chas. O. Rowe**, Titusville, Pa. Central Division General Superintendent—**R. S. Clowry**, Chicago, Ill. Central Division District Superintendents—**F. H. Tubbs**, Chicago, Ill.; **L. C. Baker**, St. Louis, Mo.; **J. J. Dickey**, Omaha, Neb.; **Frank Jaynes**, San Francisco; **E. P. Wright**, Cleveland, O.; **John F. Wallick**, Indianapolis, Ind.; **I. N. Miller**, Cincinnati, O.; **I. McMichael**, Minneapolis, Minn. Southern Division General Superintendent—**G. W. Trabue**, Nashville, Tenn. Southern Division District Superintendents—**J. B. Tree**, Richmond, Va.; **James Compton**, Nashville, Tenn.; **J. A. Brenner**, Augusta, Ga.; **C. G. Meriwether**, Mobile, Ala. **James Merihew**, Assistant General Superintendent, New York. **William Holmes**, Superintendent of Tariff and Check Bureau, New York. **D. Doren**, General Superintendent of Construction, New York. Supply Department—**William Hunter**, Superintendent and General Purchasing Agent, New York; **E. C. Cockey**, Storekeeper, New York; **Jas. S. Dickinson**, Storekeeper, Chicago; **H. H. Ward**, Cashier and Money Transfer Agent, New York City.

*For Managers and Chief Operators see list of Electricians*

Branch Offices in New York City—**Ashland House**, **Astor House**, **Beaver-street No. 70**, **Broad-street No. 8** (Check N.Y.), **Broadway Nos. 30, 71, 111, 120** (Check N.Y.), **197, 261, 279, 287, 303, 335, 346, 381, 407, 599, 785, 791, 849, 946, 957, 1227, 1265, 1323**, **Bowling-green No. 3**, **Broome-street No. 452**, **Carmanville**, **Castle Garden**, **Chatham and Duane-streets**, **Church-street No. 165**, **Claffins**, **Coal and Iron Exchange**, **Continental Hotel**, **Cooper Union**, **Courtland and West-streets**, **Cosmopolitan Hotel**, **Cotton Exchange** (Check N.Y.), **Delmonico's**, **Desbrosses St. Ferry**, **Dry Dock**, **Earle's Hotel**, **Eighth-avenue No. 75**, **Eighth-avenue and 23rd, 34th and 125th streets**, **Eleventh-avenue and 33rd, 34th and 41st streets**, **Everett House**, **Fifth-avenue Hotel**, **Fordham**, **Fort Washington**, **Fourteenth-street (West) No. 110**, **Front-street No. 122**, **Fulton Ferry**, **Fulton Market**, **General Post-office**, **Gilsey House**, **Gold-street No. 66**, **Grand Central Depot (HD & DP)**, **Grand Central Depot (UD)**, **Grand Central Hotel**, **Grand Hotel**, **Grand-street Nos. 233, 335 and 615**, **Greenwich-street No. 309**, **Harlem (HB)**, **Harlem (HM)**, **Hoffman House**, **Hotel Brunswick**, **James Slip**, **Liberty-street No. 119**, **Macy's**, **Manhattanville**, **Mercer-street No. 11**, **Merchants' Hotel**, **Morgan Iron Works**, **Mott Haven**, **Morrisania**, **National Petroleum Exchange**, **Nassau-street No. 5**, **Ninth-avenue and 73rd-street**, **New York Hotel**, **New York Petroleum Exchange**, **Occidental Hotel**, **Park-avenue Hotel**, **Park-place No. 3**, **Pearl-street Nos. 134, 218**, **Pier 1, 15, 18, 28, 30, 33, 41, 42 N. R.**, **Pine-street No. 42**, **Produce Exchange (CX)**, **Produce Exchange (AX)**, **Rossmore Hotel**, **Ship News Office**, **Sixth-avenue Nos. 666, 819, 1002, and 42nd-street**, **South Ferry**, **South and Montgomery-streets**, **Staats Zeitung Building**, **St. Cloud Hotel**, **St. James Hotel**, **St. John's Park**, **St. Nicholas Hotel**, **Stevens House**, **Stock Exchange**, **Sturtevant House**, **Stewart's**, **Station G**, **Summit Hotel**, **Third-avenue Nos. 147, 554, 1080, 1369, 1652, and 86th-street**, **Thirtieth-street Depot**, **Thirty-fourth-street (E. R.)**, **Tremont**, **Twenty-third-street and N. R.**, **Twenty-third-street (W.) No. 3**, **Union Stock Yards**, **Union-square Hotel**, **United States Hotel**, **Victoria Hotel**, **Wall-street No. 91**, **Washington Market**, **West B'way and Reade-street**, **Westminster Hotel**, **West-street No. 386**, **Windsor Hotel**.

**WOODWARD UNDERGROUND SYSTEM** of Telegraph, Telephone and Electric Light, also Fire Alarm, Police Signal and Burglar Alarm Service. The Woodward Underground System contains all the essential points necessary in a successful, cheap and durable underground telegraph and telephone system. **A. T. WOODWARD**, New York City, U.S.A.

# LIST OF AMERICAN ELECTRIC LIGHT COMPANIES

WITH

NAMES OF DIRECTORS, PARTICULARS OF CAPITAL, &c

**A** **AMERICAN CARBON COMPANY**, St. Louis, Mo., U.S.A. Capital Stock, \$100,000 full paid. J. WYMAN JONES, President, Jno E. McFORD, Secretary and Treasurer, HENSLER, Managing Director, W. H. THOMSON, Vice-President. CHAS. D. PARK. Manufacturers of a superior quality of Carbon for Electric Lights, all sizes and lengths, and plated.

**A** **AMERICAN ELECTRIC STORAGE COMPANY**, Executive Offices, No. 1 Broad-street, Newark, N.J. Board of Directors, GEORGE W. HUBBELL, Newark, N.J. H. Young, Newark, N.J., Geo. G. FRELINGHOYSEN, Newark, N.J. BAKER, Commerce, Trenton, N.J., FREDERICK T. FEAREY, Newark, N.J. Consulting Attorney, S. J. G. New York City, Consulting Electrician, NATHANIEL S. KEITH, New York City

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**B** **BRUSH ELECTRIC LIGHTING COMPANY OF BOSTON**, Rogers-build 209, Washington-street Room No. 22, Boston, Mass. HUGH O'BRIEN, Treasurer, J. SAWYER, President, P. FALSBY, Superintendent.

**C** **COLORADO EDISON ELECTRIC LIGHT COMPANY**, No. 390 Curtis-st Denver, Colorado. Wm. ORTON, President, Wm. MOORE, Vice-President, W. D. Treasurer, Wm. M. COX, Secretary, S. T. ARMSTRONG, General Superintendent.

**C** **COMPANIA ELECTRICA DE CUBA**. Presidents—HONORARIO EXCMO. Sr. G. MARTINEZ CAMPOS, Madrid, Spain, GENL. ANSON STAGAN, New York. T. M. DELANO, New York. G. M. PHELPS, New York, Secretary and Treasurer. Junta Consultiva de H. Vocales—Sr. Fernando Tilar, Sr. Jos. Barbon, Sr. Ramon de Haro, Sr. D. M. Sr. Jeanpau Limendoux, Sr. Angel Morgan, V. T. Butler, Administrador, M. S. Ingeniero, T. Ca. Barbon, Banqueros. Centro Telefonico-cable—O'Reilly, num. 3, Ha Cuba.

**E** **ECONOMIC ELECTRIC COMPANY**. GEO. J. MORSE, Secretary and Treas. E. ERNEST CADUE, President, Head-quarters—Boston, Mass., U.S.A. Incorporated under laws of the State of Maine with a capital of \$500,000, for the purpose of manufacturing, selling and leasing machinery, apparatus, instruments and appliances of all relating to Electricity.

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## **A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.**

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**ISON COMPANY FOR ISOLATED LIGHTING.** S. B. EATON, President; E. H. JOHNSON, Vice-President; F. S. HASTINGS, Treasurer; M. F. MOORE, General Manager.

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**ISON ELECTRIC ILLUMINATING COMPANY OF NEW YORK.** NORVIN GREEN, President; S. B. EATON, Vice-President; F. S. HASTINGS, Treasurer.

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**ISON ELECTRIC LIGHT COMPANY,** 65, Fifth Avenue, New York City, N.Y. S. B. EATON, President; E. H. JOHNSON, Vice-President; F. S. HASTINGS, Treasurer.

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**ELECTRIC GAS LIGHTING COMPANY** (Incorporated under the laws of the State of Maine). Directors' Office, 45, Milk-street, Boston, Mass. LOUIS W. BURNHAM, President; JOHN N. BARBOUR, Treasurer.

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**ELECTRIC, MANUFACTURING AND MISCELLANEOUS STOCK EXCHANGE OF NEW YORK (LIMITED),** Duncan-building, corner Pine and Nassau-streets. Organised for the purpose of affording a market for all classes of valuable securities not listed on the New York Stock Exchange. GEO. M. HARD, President (President Chatham National Bank), 196, Broadway; CHAS. HEYGENDORFF, 1st Vice-President, 66, New-street; NIELS P. LASSEN, 2nd Vice-President, 236, 5th avenue; ARTHUR B. GRAVES, Treasurer (President St. Nicholas Bank), 7, Wall-street; ALBERT H. JOCELYN, Secretary; WM. LAURENT BAILEY, Assistant-Secretary; THOMAS BARCLAY, Chairman and Auctioneer. Banks—St. Nicholas Bank of New York, Chatham National Bank, Third National Bank. Marginal Depositaries—Union Trust Company. Produce Exchange Bank.

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**ELECTRIC STORAGE AND LIGHT COMPANY** (organized under laws of Massachusetts, own the Patents for Faure's Storage Batteries or Electrical Energy Accumulators for Massachusetts, Rhode Island, and Connecticut. Office, 95, Milk-street, Boston, Massachusetts.

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**ELECTRICAL CONDUIT CONSTRUCTION COMPANY,** New York. Capital, \$1,000,000. A. B. CHANDLER, President; W. H. FAIRBANK, Vice-President; H. W. POPE, Treasurer; S. J. KNEELAND, Secretary.

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**HEISLER ELECTRIC BELL AND BURGLAR ALARM COMPANY.** Capital Stock, \$20,000, full paid. C. HEISLER, President; N. M. GARLAND, Secretary and Treasurer; J. S. GARLAND, Vice-President; J. CLOOS, Superintendent. Office and Factory, 809 to 817, S. Seventh-street, Saint Louis. Contractors, Manufacturers and Patentees of the Heisler System of Electric Bells, Hotel Annunciators, Burglar Alarms, Speaking Tubes, Time Recorders, Water Gauges and Thermostatic Alarms.

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**HEISLER ELECTRIC LIGHT COMPANY,** Manufacturers of Electric Light Machines and Lamps, 809 to 817 South 7th street, St. Louis, Mo. Capital, \$200,000.

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**KEITH ELECTRIC COMPANY** (organized under the laws of the State of New York). Capital Stock, \$800,000, in 8,000 shares of \$100 each. A. T. COMPTON, President; WM. H. BUTLER, Vice-President; C. D. GOULD, Secretary and Treasurer; HENRY ARDEN and CHARLES E. EMERY, Trustees. N. S. KEITH, Electrician and Manager. Office, 237, Broadway, Corner Park-place, New York City. (Room 40, Elevator on Park-place.) Object, Electric Lighting and Furnishing of Electric Power.

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**MAXIM ELECTRIC LIGHT AND POWER COMPANY,** Chester and Maple-streets, Philadelphia. Exclusive licensees for Pennsylvania of the United States and Weston Electric Light Company. All correspondence to be addressed to "Maxim Electric Light and Power Company."

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**PROVIDENCE ISLAND ELECTRIC COMPANY,** 24, Butler Exchange, Providence, R.I. HENRY HOWARD, President; J. W. DUXBURY, Secretary.

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## J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERT

**RHODE ISLAND ELECTRIC LIGHTING COMPANY**, Providence, R. I.  
Board of Trade-building, Market-square. Station No. 1, No. 270, Dyer-street. Superintending  
REGINALD C. BROWN.

**SCHUYLER ELECTRIC LIGHT COMPANY** Office, 64, Cedar-street New  
Factory, Hartford, Conn. S. D. SCHUYLER, President Geo. R. WILLIAMSON, Treasurer  
Manufacturers of dynamo machines, electric lamps, and apparatus for the production  
distribution and regulation of electric light. All articles in the above line furnished at  
reduced prices.

**SWAN INCANDESCENT ELECTRIC LIGHT COMPANY**, 853, Broadway  
Corner Fourteenth-street, Union-square, New York City, and Hamden-street, Boston.  
EDWIN EINSTEIN, President; THOMAS J. MONTGOMERY, Vice-President, W. J. MONTGOMERY,  
Treasurer and Secretary.

**THOMSON-HOUSTON ELECTRIC COMPANY**, formerly the American Electric  
Company Capital, \$125,000. Proprietors of the Thomson-Houston System of Electric Light.  
Principal Office, 131, Devonshire-street, Boston, Mass. Radio Building, Room 4,  
New Britain, Conn. HENRY A. PENTAR, President C. A. COFFIN, Vice-President  
THOMSON, Electrician, J. J. SKINNER, Secretary, S. A. BARTON, Treasurer and  
Manager. Directors, all the Officers and B. F. STINNEY.

**UNITED GLOBE ELECTRIC LIGHT COMPANY**, 15, Cortlandt-street,  
New York. We are now prepared to receive applications and furnish estimates of cost of  
Lights of 2,000 Nominal Candle Power with Dynamos. Also applications for the formation  
Local Subsidiary Companies. Allow liberal Commission upon all orders. Send for Circulars  
and information to the United Globe Electric Light Company, 15, Cortlandt-street,  
New York City.

**UNITED STATES ELECTRIC LIGHTING COMPANY**, 59, Liberty-street,  
New York. GEO. W. HERBARD, President, L. E. CURTIS, Secretary, FRANK ROBERTS, Treasurer,  
M. HARTLEY, A. P. STOKES, CHAS. R. PLINT, R. B. MINTURN, H. B. HYDE, C. W. E. WESTON,  
L. FITZGERALD, JOHN A. STEWART, W. T. HATCH, T. H. HUBBARD, Henry D. CURTIS.  
(See Advertisement.)

**VAN DEPOELE ELECTRIC LIGHT COMPANY**, Makers of Electric  
Apparatus (under Van Depoele Patents) Office and Works, 205, Van Buren-street,  
Chicago. Capital, \$1,000,000. A. K. STILES, President, A. WAHL, Vice-President, F. H. COLE,  
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**WESTERN EDISON LIGHT COMPANY**, 51 and 53, Wabash avenue, Chicago,  
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LOUDELBACK, Secretary, GEO. H. BLISS, General Superintendent, P. D. JOHNSON, Engineer.  
Directors: THOMAS A. EDISON, Anson Stager, John B. Decker, J. W. Deane, Samuel  
Norman Williams, Edison Keith, John M. Clark, John Cregar, Anthony F. Smith,  
Z. G. Simmons.

## ELECTRIC LIGHT COMPANIES IN THE UNITED STATES

FROM *THE ELECTRICIAN* (New York).

SOME idea of the extent and character of the growth of the Electric Light interest in America  
obtained from the list of electrical companies, chiefly electric light companies, which was published  
and This list has been compiled from the official records of the State of New York,  
such general information as we have been able to obtain in regard to the companies and the  
companies doing business here, which were organized in other States. As the laws of the States  
Union have general laws under which corporations may be organized and as the laws of the  
has been such from President Johnson of the other States than in New York, the list which  
probably comprises a very small part of the companies actually organized in the United States.  
The list is taken from the official records of the State of New York and does not give the  
amount of cash capital paid in, so that the information we are able to give is only in regard to  
only of the most general character.



## **F. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.**

Some time since, seven of the principal companies formed an association under the name of the Gramme Electrical Company, the principal object of which was understood to be the enforcement of the Gramme patent, and the patents of the associated companies, against all outside of the organization. Although this object does not appear to have been pursued as yet in a very vigorous manner, the Gramme Company, still forms the basis of an extremely powerful combination, which cannot well be disregarded.

It will be observed, that nearly all of the Gramme companies were organized at a comparatively early date, and all of them, with the exception of the Jablochkoff Company, appear to have taken a much larger share in the legitimate development of the business, than any of the companies outside of the organization. We think it would be within bounds to say, that nineteen-twentieths of all the legitimate commercial business done in this country has been done by the Gramme Companies. Of these, the Brush Company, the United States Company, and the Edison Company, appeared to have secured a much larger share of the business, than any of the others, and the two former are the only members of the association, so far as we can ascertain, which have as yet paid dividends.

The Brush, the Fuller, and the American Companies are working arc systems; the Edison Company devotes its attention, exclusively, to the incandescent system, the United States Company is introducing both systems. The business of these companies consists mainly in the manufacture and sale of apparatus, both to private users and to subsidiary organizations, formed for furnishing lights from central stations, and in the disposal of rights under their patents, to local organizations. The position of the Edison Company however, is somewhat peculiar, as it does not appear to conduct any manufacturing business directly: the dynamo machines, lamps, fixtures, and other apparatus of the Edison system being manufactured by separate organizations, the details of which we have not been able to ascertain. The position of the Brush Company in regard to patents, is also somewhat different from that of the others, in that it does not own the Brush patents, but holds an exclusive license under them from Mr. Brush, at a royalty of twenty per cent. upon its receipts from the sale of apparatus.

We have not been able to ascertain definitely, the amount of cash capital invested in the different Gramme Companies. The Brush Company was the outgrowth of the Telegraph Supply Company of Cleveland, which was organized in 1875, with a capital of \$100,000, for the purpose of manufacturing telegraphic instruments, and other electrical apparatus. Some time in 1877, this company took up the manufacture of the Brush apparatus, in connection with its other business, and in 1880 the name of the company was changed to its present form. In 1881, the capital of the company was increased to its present amount of \$3,000,000. How much of the original capital stock, or of the increased capital stock was issued for cash, we have not been able to ascertain, but it is generally believed that the increased stock was not all issued for cash.

The United States Company was originally organized with a capital of \$250,000, which has been increased from time to time to its present amount of \$1,500,000. Of this it appears, from the annual report filed by the company, that \$970,000 was issued for cash, and \$530,000 for patents and other property.

The Western Company has been practically absorbed by the United States Company. Of the capital stock of this company \$140,000 appears to have been issued for cash, and \$60,000 for patents.

The annual report of the Fuller Company shows that \$205,900 of its stock has been issued for cash, and \$664,100 for patents and property.

The Edison Company was originally organized with a capital of \$300,000, which has been increased from time to time to its present amount of \$720,000. The annual report of this company shows that, of this, \$312,891 has been issued for cash, and \$300,400 for patents and other property.

Of the capital stock of the American Company \$98,750 appears to have been issued for cash, and the remaining \$26,250 has, we suppose, been issued for patents or other property. This company has its principal place of business at New Britain, Conn., and should not be confounded with the American Electric Light Company of New York, of which, we are informed, it has no connection.

Of the capital stock of the Jablochkoff Company, \$41,600 appears to have been issued for cash, and \$2,200,000 for patents and other property.

Probably the amount of cash capital directly invested in all of the Gramme companies, may be roughly estimated at from three to four million dollars.

Of the ninety-two companies embraced in the main part of the list, four appear to have been organized for working or disposing of the Edison foreign patents, and nine are subsidiary or local organizations of the different Gramme companies, formed chiefly for furnishing lights from central stations. Most of the latter companies have invested considerable amounts of capital in erecting stations and procuring plant, and some of them are already doing a large and apparently profitable business. The aggregate investment of the three local companies, which are now operating stations in this city, is, nearly as we can ascertain the facts, between two and three million dollars. A large number of similar companies have been organized by the Gramme companies in other States, and the total amount of capital actually invested in them must be very considerable. We have no means of ascertaining this amount with any degree of precision, but should say that the Gramme companies and their subsidiary organizations must represent a cash investment of at least ten million dollars, and probably much more.

Of the remaining seventy-nine companies, we have not been able to discover that more than three or four have any apparatus in actual commercial use. Perhaps ten or a dozen others have done more or less experimental work, and are making some effort to get their apparatus into proper form for practical use.

Many of the others have died a natural death, and many of them appear to have been organized for purposes of speculation, pure and simple. It has been evidently the aim of the founders of these companies to meet the unlimited demand for stock, which they believe to exist, rather than to undertake the more expensive and less profitable task of supplying the public with efficient apparatus. Judging from the enormous aggregate capitalization shown by our list, it would seem that sufficient provision has already been made for absorbing the surplus cash of even the most credulous possessor of capital.

The total nominal capital of the companies embraced in our list, is \$122,445,000; deducting from this the \$3,325,000 capital stock of the three Gramme companies, which were not organized in New York, we have \$119,120,000 as the capitalization of the companies organized in a single State. The population of New York is, in round numbers, about one-tenth that of the Union, and if we assume that

# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER

companies have been formed in the other States at about the same rate, in proportion to their population as in New York (an assumption which we think would not be far out of the way), we should have \$1,200,000,000 as representing the nominal capitalization of the electric light, electric power and battery companies organized in the United States. Even these figures do not appear to be within the limits of the movement, as new companies are coming into existence more rapidly than ever before.

We have no means of estimating, even approximately, the amount of capital actually invested in the business by the companies which are embraced in our list, outside of the Gramme organization, which we believe it to be comparatively small. Deducting from the total capital stock of all the companies \$15,065,000, the stock of the Gramme companies and their subsidiary organizations, we have \$108,380,000 as the capitalization of the other companies. We doubt if all these latter companies together, have invested \$500,000 in actual development and prosecution of the business. The official records disclose the amount of cash capital paid in to the companies of this group, which is to be very small. The greater part of these companies have filed no annual report, many of them yet having been in existence for a year, and many of those of earlier incorporation have been practically abandoned. The following are the figures in regard to payment of capital given in the reports which have been filed:—

## GRAMME COMPANIES.

| NAME OF COMPANY                          | Date of Incorporation | Capital Stock | Nominal par value per share | Payable      |
|------------------------------------------|-----------------------|---------------|-----------------------------|--------------|
| Brush Electric Co. ....                  | Oct. 18, 1875         | 3,000,000     | 100                         | Brush.       |
| Weston Electric Light Co. ....           | July 7, 1877          | 200,000       | 100                         | Weston.      |
| United States Electric Lighting Co. .... | June 8, 1878          | 1,500,000     | 100                         | Weston and   |
| Fuller Electrical Co. ....               | Oct. 2, 1878          | 870,000       | 100                         | Fuller and   |
| Edison Electric Light Co. ....           | Oct. 17, 1878         | 720,000       | 100                         | Edison.      |
| American Electric Co. ....               | July 16, 1880         | 125,000       | 25                          | Thomson-H    |
| Jablochkoff Electric Lighting Co. ....   | Jan. 27, 1881         | 2,250,000     | 100                         | Jablochkoff. |
| Total . . .                              |                       | \$8,865,000   |                             |              |

## OTHER COMPANIES INCORPORATED IN THE STATE OF NEW YORK INCLUDING GRAMME SUB-COMPANIES.

| NAME OF COMPANY                             | Date of Incorporation | Capital Stock | Nominal par value per share | Payable            |
|---------------------------------------------|-----------------------|---------------|-----------------------------|--------------------|
| U. S. Electric Engine Co. ....              | Oct. 24, 1877         | 1,000,000     | 100                         | Sawyer.            |
| Hussey Electric Magnetic Engine Co. ....    | June 21, 1878         | 100,000       | 100                         | Hussey.            |
| New York Electric Light Co. ....            | Nov. 11, "            | 5,000,000     | 100                         |                    |
| National Electric Light and Power Co. ....  | Nov. 20, "            | 300,000       | 100                         | Heckel.            |
| Brooklyn Electric Light Co. ....            | Dec. 16, "            | 2,500,000     | 100                         |                    |
| Dynamo Electric Co. ....                    | Jan. 4, 1879          | 500,000       | 100                         |                    |
| International Electrical Co. ....           | Jan. 10, "            | 24,000        | 100                         |                    |
| Manhattan Electric Light Co. ....           | Jan. 18, "            | 3,000,000     | 10                          |                    |
| Hussey Electro Magnetic Motor Co. ....      | July 13, "            | 300,000       | 50                          | Hussey.            |
| American Dynamo Electric Machine Co. ....   | Oct. 27, "            | 5,000         | 50                          | Levet-Muller.      |
| Metropolitan Electric Light Co. ....        | Feb. 17, 1880         | 200,000       | 40                          |                    |
| Rochester Electric Light Co. ....           | Feb. 24, "            | 100,000       | 20                          | Weston and         |
| Universal Electric Light Co. ....           | April 8, "            | 10,000,000    | 100                         | Brantlee.          |
| Armour-Hochhausen Electric Co. ....         | Sept. 3, "            | 100,000       | 100                         | Armour-Hochhausen. |
| New Electric Light Co. ....                 | Sept. 8, "            | 100,000       | 100                         | Lugo.              |
| Brush Electric Light Co., of New York       | Sept. 10, "           | 100,000       | 100                         | Brush.             |
| Lugo Dynamo Electric Co. ....               | Oct. 2, "             | 100,000       | 100                         | Lugo.              |
| Dynamo Electric Power and Light Co. ....    | Oct. 13, "            | 5,000,000     | 100                         |                    |
| Edison Illuminating Co. ....                | Dec. 17, "            | 1,000,000     | 100                         | Edison.            |
| Manhattan Electric Light Co. ....           | Dec. 20, "            | 600,000       | 100                         |                    |
| Franklin Electric Light Co. ....            | Dec. 23, "            | 600,000       | 100                         |                    |
| Edison E. L. Co. of Europe, Limited . . .   | Dec. 24, "            | 2,000,000     | 100                         | Edison.            |
| N. Y. Electric Light Association . . .      | Dec. 27, "            | 300,000       | 100                         | Edison.            |
| United States Illuminating Co. ....         | Jan. 31, 1881         | 1,000,000     | 100                         | Weston and         |
| Blanchard Electric Light and Power Co. .... | Jan. 11, "            | 1,000,000     | 10                          | Blanchard.         |
| Higgs Electric Light and Power Co. ....     | Jan. 11, "            | 500,000       | 5                           | Higgs.             |
| Nassau Electric Light Co. ....              | Feb. 1, "             | 250,000       | 100                         |                    |
| Standard Electric Light Co. ....            | Feb. 18, "            | 250,000       | 100                         | Holcomb.           |
| Brush Electric Illuminating Co. ....        | Feb. 19, "            | 1,000,000     | 100                         | Brush.             |
| American Electric Light Co. ....            | April 4, "            | 500,000       | 50                          | Bahn, Fox          |
| Albany Electric Illuminating Co. ....       | April 7, "            | 100,000       | 100                         | Brush.             |
| American Electric Light Co. ....            | April 12, "           | 400,000       | 20                          | Markland.          |
| Saratoga Electric Illuminating Co. ....     | May 2, "              | 50,000        | 100                         |                    |
| Edison Electric Light Co. of Havana . . .   | June 17, "            | 1,000,000     | 100                         | Edison.            |
| Edison Electric Light Co. of Porto Rico     | June 17, "            | 1,000,000     | 100                         | Edison.            |
| Electric Motive Power Co. ....              | June 25, "            | 500,000       | 100                         |                    |
| Manhattan Electric Power Co. ....           | June 27, "            | 100,000       | 100                         |                    |

# IRLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISER.

## HER COMPANIES INCORPORATED IN THE STATE OF NEW YORK,

INCLUDING GRAMME SUB-COMPANIES—Continued.

| NAME OF COMPANY.                    | Date of Incorporation | Capital Stock | Nominal par value per share | System.                |
|-------------------------------------|-----------------------|---------------|-----------------------------|------------------------|
| Electric Light Co., of Rochester..  | June 25, 1881         | 100,000       | 100                         | Brush.                 |
| Electric Co. ....                   | Aug. 2, "             | 500,000       | 100                         | Hochhausen.            |
| T. Electric Light & Power Co.       | Aug. 24, "            | 50,000        | 100                         | Daft.                  |
| Electric Light and Power Co.        | Sept. 13, "           | 600,000       | 1                           | Markland.              |
| Electric Light Co. ....             | Oct. 2, "             | 1,000,000     | 100                         | Harris J. Muller.      |
| Electric Light Co. ....             | Oct. 7, "             | 6,000,000     | 100                         |                        |
| Electric Light and Supply Co...     | Oct. 24, "            | 500,000       | 25                          | Charles E. Long.       |
| Electric Railway & Power Co.        | Oct. 24, "            | 10,000,000    | 25                          |                        |
| Electric Light Co. ....             | Oct. 28, "            | 1,000         | 10                          |                        |
| , for Isolated Lighting .....       | Nov. 23, "            | 1,000,000     | 100                         | Edison.                |
| Electric Light & Moor Power Co.     | Dec. 8, "             | 500,000       | 10                          | Holcombe.              |
| Electric Co. ....                   | Dec. 13, "            | 500,000       | 100                         |                        |
| Electric Colonial Co. ....          | Jan. 12, 1882         | 100,000       | 100                         | Edison.                |
| Electric Light and Power Co. ....   | Jan. 16, "            | 2,500,000     | 50                          | Keith.                 |
| Electric Light Co., of N. Y. ...    | Jan. 23, "            | 500,000       | 50                          | Sheridan.              |
| Electric Light and Power            |                       |               |                             |                        |
| of the United States. ....          | Jan. 25, "            | 150,000       | 10                          | F. H. Beers.           |
| Electric Light and Power Co., of    |                       |               |                             |                        |
| the State of N. Y. ....             | Feb. "                | 30,000        | 25                          | F. H. Beers.           |
| Electric Light Co. ....             | March 3, "            | 500,000       | 100                         | Daft.                  |
| Electric Light and Power Co.        | March "               | 10,000,000    | 100                         |                        |
| Electric Light and Power            |                       |               |                             |                        |
| of the State of N. Y. ....          | March 9, "            | 300,000       | 10                          | F. H. Beers.           |
| Incandescent Electric Light Co...   | March 17, "           | 800,000       | 100                         | Swan.                  |
| Incandescent Electric Light Co.,    |                       |               |                             |                        |
| of the Pacific Coast .....          | April 24, "           | 500,000       | 100                         | Swan.                  |
| Force Co. ....                      | May 20, "             | 5,000,000     | 100                         | Faure.                 |
| Electric Light Co. ....             | May 24, "             | 2,000,000     | 100                         | Brush-Swan.            |
| Storage and Power Co. ....          | June 5, "             | 100,000       | 100                         | Buel.                  |
| and Chicago Electric Under-         |                       |               |                             |                        |
| ground Co. ....                     | June 22, "            | 2,500,000     | 5                           |                        |
| Electric Co. ....                   | July 14, "            | 20,000        | 100                         | Vanderweyde.           |
| Electric Light and Construction Co. | July 28, "            | 100,000       | 100                         |                        |
| Electric Manufacturing Co. ....     | Aug. 2, "             | 40,000        | 100                         | Parker.                |
| Electric Light and Power            |                       |               |                             |                        |
| of the city of Binghamton ....      | Aug. 5, "             | 75,000        | 10                          | F. H. Beers.           |
| Electric Magneto Electric Light &   |                       |               |                             |                        |
| Co. ....                            | Aug. 9, "             | 50,000        | 10                          |                        |
| American Electric Light Co. ...     | Aug. 9, "             | 300,000       | 100                         | Bohm, Fox & Bernstein. |
| and Electric Storage Co. ....       | Aug. 10, "            | 2,000,000     | 100                         | Faure.                 |
| Underground Electric Co. ....       | Aug. 15, "            | 2,500,000     | 100                         |                        |
| Electric Manufacturing Co. ....     | Aug. 16, "            | 500,000       | 100                         | Charles E. Ball.       |
| Incandescent Lamp Co. ....          | Sept. 2, "            | 200,000       | 100                         | Slattery.              |
| Electric Co. ....                   | Sept. 6, "            | 800,000       | 100                         | Keith.                 |
| and Electric Light Co. ....         | Sept. 8, "            | 1,200,000     | 100                         | Sawyer, Man & Knowles  |
| Electric Storage Co. ....           | Oct. 7, "             | 2,000,000     | 100                         | Faure.                 |
| Electric Light and Power Co., of    |                       |               |                             |                        |
| the State of N. Y. ....             | Oct. 9, "             | 300,000       | 10                          |                        |
| and Electric Light & Power Co.      | Oct. 19, "            | 500,000       | 10                          | Hussey.                |
| Electric Storage Co. ....           | Oct. 21, "            | 2,000,000     | 100                         | Faure.                 |
| Electric Light and Power Co.        | Nov. 2, "             | 1,000,000     | 100                         | Olvestad.              |
| Electric Storage and Light Co. ...  | Nov. 15, "            | 2,000,000     | 100                         | Faure.                 |
| Electric Light and Power            |                       |               |                             |                        |
| of the city of Brooklyn .....       | Nov. 17, "            | 1,000,000     | 10                          | F. H. Beers.           |
| Electric Light Co. ....             | Nov. 17, "            | 1,000,000     | 100                         | Schuyler.              |
| Electric Light and Storage Co...    | Nov. 23, "            | 2,000,000     | 100                         | Faure.                 |
| Electric Light Co. ....             | Dec. 1, "             | 100,000       | 25                          |                        |
| Electric Light and Power Co. ...    | Dec. 7, "             | 1,000,000     | 10                          | Hussey.                |
| Electrical Co., for N. Y. ....      | Dec. 8, "             | 350,000       | 100                         |                        |
| Electrical Co., for Canada .....    | Dec. 8, "             | 350,000       | 100                         |                        |
| & Brooklyn Electric Light Co.       | Dec. 30, "            | 25,000        | 10                          |                        |
| Electric Manufacturing Co...        | Jan. 28, 1883         | 60,000        | 100                         |                        |
| Accumulator Co. ....                | Feb. 21, "            | 5,000,000     | 100                         | Sellon-Volckmar.       |
| Foreign Electric Light Co. ....     | March 6, "            | 1,000,000     | 100                         | Schuyler.              |
| Total.....                          |                       | \$113,780,000 |                             |                        |

and Total { Gramme Companies..... \$8,665,000  
Other Companies..... 113,780,000  
\$122,445,000

|                                            |    |    |    |    |    | <i>Issued for Property.</i> | <i>Issued for Cash.</i> |
|--------------------------------------------|----|----|----|----|----|-----------------------------|-------------------------|
| The Arnoux-Hochhausen Electric Company     | .. | .. |    |    |    | \$ 100,000                  |                         |
| „ Lugo Dynamo Electric Company             | .. | .. |    |    |    | 99,600                      | \$ 400                  |
| „ New York Electric Light Association      | .. | .. |    |    |    | 300,000                     |                         |
| „ Blanchard Electric Light & Power Company | .. | .. |    |    |    | 1,000,000                   |                         |
| „ Excelsior Electric Company               | .. | .. |    |    |    | 482,500                     | 16,750                  |
| „ Markland Electric Light & Power Company  | .. | .. |    |    |    | 600,000                     |                         |
| „ Sheridan Electric Light Company          | .. | .. |    |    |    | 600,000                     |                         |
| „ Fitch Electric Light Company             | .. | .. |    |    |    | 100,000                     |                         |
| Total                                      | .. | .. | .. | .. | .. | <u>\$3,182,100</u>          | <u>\$17,150</u>         |

It will probably be safe to assume that the "property" for which the stock is issued, consists nearly all cases, of patents. If the proportion of cash to patents should continue the same through rest of the list, the amount of cash actually paid in to all the companies of this group would be a more than the amount we have indicated. Undoubtedly, this does not by any means represent extent of the contribution levied upon the investing public by these enterprises. The stock having issued to promoters for the patents, has been sold by them to the public at large for such prices as be obtained. How much has been realized by the promoters of these companies, in this way, we can tell, but the aggregate amount must be very large.

While the greater part of the companies, recently organized, have been devoting their attention principally to experiments, and to speculation, the principal companies, which entered the field earlier date, have been steadily strengthening their commercial position.

As we have already said, the legitimate business already done, has been done almost entirely by Gramme companies, and all indications seem to point to a further concentration of the business in hands, rather than a distribution, of any considerable part of it, among additional competitors.

It appears, from a circular recently issued by the Gramme company, that the associated company own, or control, between four and five hundred patents, relating to electric light and power. This number of patents, if used together, and backed by the great commercial weight of the company owning them, would prove an extremely formidable obstacle to the success of any outside competitor.

Considerable misapprehension appears to exist in regard to the relation of patents, to the development of the business. As the fundamental principles of dynamo machines, arc lamps, incandescent lamps, and other necessary parts of the apparatus, have long since become public property, it is by hastily assumed, that existing patents cover only immaterial variations, which are not essential. This is an entirely mistaken view. Existing patents, in fact, cover a great mass of improvements, some of important in their nature, many of them relating only to details, but together, representing difference between the crude and imperfect apparatus of some years since, and the complete and efficient systems which some of the leading companies are now introducing. It is quite easy to make open apparatus without infringing any patent, but it is extremely difficult, if not altogether impossible any person, except those who entered the field at an early date, to make apparatus which is capable competing in the market, without infringing a good many patents.

The difficulty of avoiding existing patents has been materially increased by the policy, which principal companies have adopted, of not selling detach parts of apparatus, so that any competitor be prepared to furnish a complete system, in order to do any business at all.



**NEW YORK BOARD FIRE UNDERWRITERS**, Boreel-building, No. 115 Broadway, New York, rooms Nos. 32 to 38. The New York Board of Fire Underwriters at a meeting held this day (Jan. 12, 1882) adopted the following standard for electric light wires, lamps, etc., in lieu of former standard:

**CAPACITY OF CONDUCTORS** (*for Arc Lights*).—The conductor must have a weight per running foot at least equal to that of the wire (or parallel group of wires), constituting the main circuit of the magnetic regulator of the electric lamps, or of the armature of the machine employed, whichever of these is the largest. *For Incandescent Lights*.—Wherever a connection is made between a larger and a smaller conductor at the entrance to or within a building, some approved automatic device must be introduced in the circuit of the smaller conductor, whereby it shall be interrupted whenever the current passing through it is in excess of its safe carrying capacity. The safe carrying capacity of a wire is that current which it will convey without becoming painfully warm when grasped in the closed hand.

**INSULATION**.—All wires, machines and lamps to be so mounted and secured as to insure complete and continuous insulation, with the exception of those parts (such as portions of the lamps or machines for example), where insulation is impossible, and in this case accidental contact with exterior objects must be prevented by appropriate screens or the like. In no case must "ground circuits" be employed, or any portion of the system be allowed to come into conducting connection with the earth through water or gas pipes or otherwise. Exposed wires must be covered with at least two coatings, one of insulating material next the wire, of a thickness and material approved by the Board, and another outside of this, of a material calculated to protect the former from abrasion or other mechanical injury. Where there is a possible exposure to water, the first or second coating must be impervious to that fluid. Wherever electricity is carried into a building by conductors from an exterior source, a "cut out" must be provided at a point as near as possible to the entrance to such building. The outgoing and returning wires for Arc Lights should enter and leave each building at points at least one foot from each other. The wires passing through the exterior walls of a building should be firmly encased in substantial tubes of non-conducting material, not liable to absorb moisture, and placed in such a manner as to prevent rain water from entering the building along the wire. In running along walls and the like, wires should be rigidly attached to the same by non-conducting fastenings (the wires themselves being well insulated), and should not be hung from projecting insulators in loose loops. All wires should be placed at a distance of eight inches for Arc Lights and two and one-half inches for Incandescent Lights from each other, and wherever they approach any other wire or conducting body capable of furnishing another circuit or ground connection, they must be rigidly secured and separated from the same by some continuous solid non-conductor, such as dry wood, of at least one-half inch in thickness. Wherever wires are carried through walls, floors or partitions in buildings, they must be surrounded by a special insulating tube of substantial material. All joints in wires must be made in such a manner as to secure a perfect and durable contact. Continuous wires (without joints) to be used as far as possible.

**GLOBES**.—Arc Lights must be protected by glass globes, enclosed at the bottom to prevent the fall of ignited particles, and where inflammable materials are present below the lamps, a wire netting must be added to keep the parts of the globe in place in case of its fracture during use. All broken and cracked globes to be at once replaced by perfect globes. In show windows and other places where inflammable materials are near the lights, spark arrestors shall be placed at the top of the globes.

**AUTOMATIC SHUNT**.—Wherever a current of such high electro-motive force is employed that if concentrated on one lamp of the series, it would produce an arc capable of destroying or fusing parts of such lamp, an automatic switch must be introduced in each lamp by which it will be thrown out of circuit before the arc approaches any such dangerous extent. Companies furnishing electricity from central stations must enter into an agreement with the New York Board of Fire Underwriters, binding themselves to test their lines for ground connections at least *once* every day (and preferable three times per day), and to report the result of such tests to the Board weekly. Means by which those in charge of the dynamo-electric machines will be warned of any excessive flow of current, or means whereby the same will be automatically checked, must in all cases be provided.

LIST OF THE PRINCIPAL  
SCIENTIFIC AND LITERARY INSTITUTIC  
IN THE UNITED STATES.

THE BOLD-FACED NUMBERS INDICATE THE MOST IMPORTANT SOCIETIES

S. Societies publishing Transactions; L. Libraries exclusively, though the others also have libraries: M. M  
O. Observatories; T. Technical Schools; U. Universities; E. Electrical Engineering.  
This arrangement is alphabetical by towns and not by States.

|                           |     |                                               |
|---------------------------|-----|-----------------------------------------------|
| Albany, N. Y. ....        | 1   | Albany Institute.....                         |
| " " .....                 | 2   | N. Y. State Agricultural Society .....        |
| " " .....                 | 3   | N. Y. State Library .....                     |
| " " .....                 | 4   | State Museum of Natural Sciences .....        |
| Allegheny, Pa. ....       | 5   | Observatory .....                             |
| Annapolis, Md.....        | 6   | U. S. Naval Academy .....                     |
| Ann Arbor, Mich.....      | 7   | University of Michigan .....                  |
| " " .....                 | 8   | Observatory.....                              |
| Atlanta, Ga. ....         | 9   | City Library.....                             |
| Baltimore, Md.....        | 10  | Johns Hopkins University .....                |
| " " .....                 | 11  | Maryland Academy of Sciences .....            |
| " " .....                 | 12  | Peabody Institute .....                       |
| Bethlehem, Pa. ....       | 13  | Packer University .....                       |
| Bloomington, Ind.....     | 14  | The "Owen Cabinet" .....                      |
| Boston, Mass.....         | 15  | Amer. Academy of Arts and Sciences.....       |
| " " .....                 | 16  | Amer. Statistical Association .....           |
| " " .....                 | 17  | Athenaeum .....                               |
| " " .....                 | 18  | Mass. Institute of Technology.....            |
| " " .....                 | 19  | Boston Natural History Society .....          |
| " " .....                 | 20  | Public Library of the City .....              |
| " " .....                 | 21  | State Library .....                           |
| Brooklyn, N. Y.....       | 22  | Brooklyn Library .....                        |
| Brunswick, Me.....        | 23  | Bowdoin College.....                          |
| Buffalo, N. Y. ....       | 24  | Buffalo Society of Natural Sciences .....     |
| Burlington, Vt. ....      | 25  | University of Vermont .....                   |
| Cambridge, Mass.....      | 26  | Harvard University .....                      |
| " " .....                 | 27  | Lawrence Scientific School .....              |
| " " .....                 | 28  | Museum of Comparative Zoölogy .....           |
| " " .....                 | 29  | Observatory.....                              |
| " " .....                 | 30  | Peabody Museum .....                          |
| Charleston, S. C. ....    | 31  | College of Charleston.....                    |
| " " .....                 | 32  | Library Society .....                         |
| " " .....                 | 33  | Medical School of South Carolina .....        |
| Charlottesville, Va. .... | 34  | University of Virginia .....                  |
| Chicago, Ill. ....        | 35  | Chicago Academy of Sciences .....             |
| " " .....                 | 36  | Observatory.....                              |
| " " .....                 | 37  | Public Library .....                          |
| Cincinnati, Ohio. ....    | 38  | Observatory.....                              |
| " " .....                 | 39  | Public Library—C. W. Merrill, Librarian ..... |
| " " .....                 | 40  | Zoological Society .....                      |
| " " .....                 | 40½ | Ohio Mechanics Institute .....                |
| Cleveland " .....         | 41  | Kirtland Society of Natural Sciences.....     |
| Clinton, N. Y. ....       | 42  | Observatory.....                              |
| Columbia, S. C.....       | 43  | University of South Carolina .....            |
| Columbus, Ohio. ....      | 44  | State Library .....                           |
| Davenport, Iowa. ....     | 45  | Academy of Natural Sciences .....             |
| Des Moines, " .....       | 46  | State Library .....                           |
| Dubuque, " .....          | 47  | Iowa Institute of Science and Arts.....       |
| Easton, Pa. ....          | 48  | Pardee Scientific School .....                |

OF THE PRINCIPAL SCIENTIFIC AND LITERARY INSTITUTIONS IN THE UNITED STATES—

continued.

|                        |     |                                                         |       |
|------------------------|-----|---------------------------------------------------------|-------|
| ngow, Mo. ....         | 49  | Observatory.....                                        | O.    |
| over, N. H. ....       | 50  | Dartmouth College.....                                  | U. M. |
| " .....                | 51  | Observatory.....                                        | O.    |
| risburg, Pa. ....      | 52  | State Library .....                                     | L.    |
| rtford, Ct.....        | 53  | Amer. Philological Association .....                    | S.    |
| " .....                | 54  | Watkinson Reference Library.....                        | L.    |
| aken, N. J. ....       | 55  | Stevens Institute of Technology .....                   | T.    |
| neapolis, Ind.....     | 56  | Public Library .....                                    | L.    |
| sa City, Iowa. ....    | 57  | State University.....                                   | U.    |
| ica, N. Y.....         | 58  | Cornell University—W. A. Anthony, Professor of Physics. | T. U. |
| asing, Mich.....       | 59  | State Library .....                                     | L.    |
| wrence, Kans. ....     | 60  | Academy of Science .....                                | S. M. |
| xington, Va.....       | 61  | School of Civil and Mining Engineering .....            | T.    |
| isville, Ky. ....      | 62  | Public Library .....                                    | L.    |
| dison, Wis. ....       | 63  | State Historical Society .....                          | S. M. |
| " .....                | 64  | Wis. Acad. of Sciences, Arts and Letters .....          | S. M. |
| ddletown, Ct. ....     | 65  | Wesleyan University.....                                | M. U. |
| neapolis, Minn. ....   | 66  | University of Minnesota .....                           | U.    |
| hville, Tenn. ....     | 67  | State Library .....                                     | L.    |
| ark, N. J. ....        | 68  | New Jersey Historical Society.....                      | S.    |
| w Brunswick, N. J..... | 69  | Rutgers Scientific School .....                         | T.    |
| w Haven, Ct. ....      | 70  | Academy of Arts and Sciences .....                      | S.    |
| " .....                | 71  | American Oriental Society .....                         | S.    |
| " .....                | 72  | Observatory.....                                        | O.    |
| w Haven, Ct.....       | 73  | Peabody Museum .....                                    | M.    |
| " .....                | 74  | Sheffield Scientific School.....                        | T.    |
| " .....                | 75  | Yale College .....                                      | U.    |
| w Orleans, La.....     | 76  | Academy of Sciences.....                                | S.    |
| " .....                | 77  | State Library .....                                     | L.    |
| w York City, N. Y..... | 78  | American Geographical Society .....                     | S.    |
| " .....                | 79  | American Institute.....                                 | S.    |
| " .....                | 80  | American Institute of Architects .....                  | S.    |
| " .....                | 81  | Amer. Museum of Natural History .....                   | M.    |
| " .....                | 82  | American Society of Civil Engineers .....               | S.    |
| " .....                | 83  | Astor Library .....                                     | L.    |
| " .....                | 84  | College of Physicians and Surgeons .....                | M.    |
| " .....                | 85  | Columbia College .....                                  | U.    |
| " .....                | 86  | Cooper Union .....                                      | T.    |
| " .....                | 87  | Lenox Library .....                                     | L.    |
| " .....                | 88  | Mercantile Library .....                                | L.    |
| " .....                | 89  | Metropolitan Museum of Art .....                        | M.    |
| " .....                | 90  | New York Academy of Sciences .....                      | S.    |
| " .....                | 91  | New York Historical Society .....                       | S. M. |
| " .....                | 92  | New York Society Library .....                          | L.    |
| " .....                | 93  | New York School of Mines .....                          | T.    |
| rmal, Ill.....         | 94  | Illinois Museum of Natural History .....                | M.    |
| kland, Cal.....        | 95  | University of California .....                          | U.    |
| ladelphia, Pa. ....    | 96  | Academy of Natural Sciences .....                       | S. M. |
| " .....                | 97  | American Philosophical Society .....                    | S.    |
| " .....                | 98  | Franklin Institute, 15, S. 7th-street—Wm. H. Wahl, Sec. | S.    |
| " .....                | 99  | Library Company of Philadelphia .....                   | L.    |
| " .....                | 100 | Mercantile Library.....                                 | L.    |
| " .....                | 101 | Pennsylvania Historical Society .....                   | S.    |
| " .....                | 102 | University of Pennsylvania .....                        | U.    |
| " .....                | 103 | Zoölogical Society of Philadelphia .....                | M.    |
| aburgh, Pa.....        | 104 | Mercantile Library.....                                 | L.    |
| rtland, Me.....        | 105 | Portland Society of Natural History .....               | S. M. |
| nceton, N. J.....      | 106 | College of New Jersey .....                             | U. M. |
| " .....                | 107 | Green School of Science .....                           | T.    |
| " .....                | 108 | Observatory.....                                        | O.    |
| vidence, R. I. ....    | 109 | Athenæum .....                                          | L.    |
| " .....                | 110 | Brown University .....                                  | M. U. |
| leigh, N. C.....       | 111 | State Library .....                                     | L.    |
| hmond, Va. ....        | 112 | State Library .....                                     | L.    |
| la, Mo. ....           | 113 | Mo. School of Mines and Metallurgy.....                 | T.    |
| ramento, Cal. ....     | 114 | State Library .....                                     | L.    |
| Louis, Mo. ....        | 115 | Academy of Science .....                                | S.    |
| " .....                | 116 | Mercantile Library.....                                 | L.    |
| em, Mass.....          | 117 | Am. Assoc. for Advancement of Science .....             | S.    |
| " .....                | 118 | Essex Institute .....                                   | S. M. |
| " .....                | 119 | Peabody Academy of Sciences .....                       | S.    |
| i Francisco, Cal. .... | 120 | California Academy of Sciences .....                    | S.    |
| " .....                | 121 | Woodward's Zoölogical Institute .....                   | M.    |

LIST OF THE PRINCIPAL SCIENTIFIC AND LITERARY INSTITUTIONS IN THE UNITED STATES  
*continued.*

|                        |     |                                          |       |
|------------------------|-----|------------------------------------------|-------|
| Springfield, Ill.....  | 122 | State Library .....                      | L.    |
| Troy, N. Y. ....       | 123 | Rensselaer Polytechnic Institute.....    | T.    |
| Washington, D. C. .... | 124 | American Medical Association.....        | S.    |
| "    "    .....        | 125 | Army Medical Museum.....                 | M.    |
| "    "    .....        | 126 | Corcoran Gallery of Art .....            | M.    |
| "    "    .....        | 127 | Library of Congress .....                | L.    |
| "    "    .....        | 128 | National Academy of Sciences.....        | S.    |
| "    "    .....        | 129 | Philosophical Society of Washington..... | S.    |
| "    "    .....        | 130 | Smithsonian Institution .....            | S. M. |
| West Point, N. Y. .... | 131 | U. S. Military Academy .....             | T.    |
| Worcester, Mass. ....  | 132 | American Antiquarian Society.....        | S. M. |

PRINCIPAL GOVERNMENT DEPARTMENTS AND BUREAUS IN CITY OF WASHINGTON.

|     |                                  |     |                                 |
|-----|----------------------------------|-----|---------------------------------|
| 133 | Agriculture, Department of.      | 147 | National Museum.                |
| 134 | Census Office.                   | 148 | Nautical Almanac Office.        |
| 135 | Coast Survey.                    | 149 | Naval Observatory.              |
| 136 | Education, Bureau of.            | 150 | Navigation, Bureau of.          |
| 137 | Engineer Bureau, War Department. | 151 | Navy Department.                |
| 138 | Entomological Commission.        | 152 | Ordnance Office.                |
| 139 | Fish Commission.                 | 153 | Patent Office.                  |
| 140 | Geological Surveys.              | 154 | Post Office Department.         |
| 141 | Hydrographic Office.             | 155 | Quartermaster General's Office. |
| 142 | Interior Department.             | 156 | Signal Office.                  |
| 143 | Land Office.                     | 157 | State Department.               |
| 144 | Light House Board.               | 158 | Statistics, Bureau of.          |
| 145 | Marine Hospital Service.         | 159 | Treasury Department.            |
| 146 | Medical Department, U. S. A.     | 160 | War Department.                 |

CLASSIFIED INDEX.

LIBRARIES :

Nos. 3, 9, 12, 17, 20, 21, 22, 32, 37, 39, 44, 46, 52, 54, 56, 59, 62, 67, 77, 83, 87, 88, 92, 100, 104, 109, 111, 112, 114, 116, 122, 127, 133, 135, 136, 137, 142, 146, 149, 151, 157, 169, 150.

MUSEUMS :

Nos. 4, 7, 14, 19, 24, 28, 30, 31, 33, 35, 40, 41, 47, 50, 60, 63, 64, 65, 73, 81, 84, 89, 91, 94, 103, 105, 106, 110, 118, 121, 125, 126, 130, 132, 133, 135.

OBSERVATORIES :

Nos. 5, 8, 29, 36, 38, 42, 49, 51, 72, 108, 149.

SOCIETIES OR INSTITUTIONS PUBLISHING TRANSACTIONS :

Nos. 1, 2, 11, 15, 16, 19, 24, 28, 35, 40, 41, 45, 47, 53, 60, 63, 64, 68, 70, 71, 72, 73, 77, 82, 90, 91, 96, 97, 98, 101, 105, 115, 117, 118, 119, 120, 124, 128, 129, 130, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160.

TECHNICAL SCHOOLS :

Nos. 6, 13, 18, 29, 34, 48, 55, 58, 61, 69, 74, 86, 93, 107, 113, 123, 131.

UNIVERSITIES :

Nos. 7, 10, 13, 23, 25, 26, 31, 34, 43, 50, 57, 58, 65, 66, 75, 85, 95, 102, 106, 110.

COURSES OF ELECTRICAL ENGINEERING :

Nos. 18, 55, 58.



**CORNELL UNIVERSITY, ITHACA, N.Y.** The rapid development of the applications of electricity has created a demand for thoroughly trained engineers conversant with electrical science, especially by companies carrying on telegraphy, electric lighting, electrical supply and transmission of power, electroplating, the manufacture of electrical machinery and apparatus, etc. Recognizing this demand, the trustees of Cornell University have established the following **COURSE IN ELECTRICAL ENGINEERING**, to which students will be admitted at the beginning of the next academic year (September 18, 1883). The general studies of the course are mainly those of Mechanical and Civil Engineering, but the special studies embrace the theory of electricity, the methods of electrical measurement, the construction and testing of telegraph lines, cables, and instruments, the theory and construction of dynamo-machines, the methods of electric lighting, and the electrical transmission of power.

**EQUIPMENT.**—The University possesses a very extensive collection of electrical apparatus, including resistance coils, galvanometers, condensers, and other apparatus for measurements, from Elliott Brothers of London, Siemens & Halske of Berlin, and other makers; the special instruments by Deprez, Siemens & Halske, Professors Ayrton and Perry, and Sir William Thomson, for measuring the currents and potentials of dynamo-machines; two large and several small dynamo-machines; electric lamps of several makers; telegraph and telephone instruments; besides magnetometers, dynamometers for measuring power used in driving dynamos, photometers, and other accessory apparatus. Telegraph and telephone lines are available for making tests, and electric light circuits upon the University grounds enable the student to make his experiments under the conditions that obtain in actual practice.

In the new Physical Laboratory every facility is provided for the use of electrical apparatus under the most favorable conditions, and a workshop attached to the laboratory provides for the construction of special instruments for investigations.

**ADMISSION.**—Entrance Examinations. (The Primary Examination for Admission to the University). All candidates for admission, except those provided with certificates or diplomas as specified below, are examined as follows:

1. In *English Grammar*; Whitney's Essentials of English Grammar is the standard. A short composition is required as a test of the candidate's knowledge of spelling, punctuation, the use of capitals, and elementary English construction.

At the option of the candidate the subject for this composition will be assigned by the examiner from one of the books named below, and the knowledge of the subject matter shown will be duly regarded.

In 1883: Shakespeare's Julius Caesar, Bunyan's Pilgrim's Progress, Scott's Ivanhoe, Gray's Elegy.

In 1884: Shakespeare's Coriolanus, Thackeray's Henry Esmond, Irving's Sketch Book, Longfellow's Evangeline.

In 1885: Shakespeare's Merchant of Venice, Scott's Lady of the Lake, Hawthorne's Twice Told Tales, Lowell's Vision of Sir Launfal.

2. In *Geography*, political and physical; as much as is contained in Harper's School Geography, or in Warren's Common School Geography.

3. In *Physiology*; as presented in the smaller text-books upon the subject, exclusive of the nervous system and the names of bones and muscles.

4. In *Arithmetic*, including the metric system of weights and measures; as much as is contained in the larger text-books.

5. In *Plane Geometry*; as much as is contained in the first five books of Chauvenet's Treatise on Elementary Geometry, or in the first five books of Wentworth's Elements of Plane and Solid Geometry, or in the first six books of Newcomb's Elements of Geometry, or in the first six books of Hamblin Smith's Elements of Geometry.

6. In *Elementary Algebra*, through quadratic equations, and including radicals and the theory of exponents; as much as is contained in the first fourteen chapters of Loomis' Treatise on Algebra, or in Olney's Elementary Course in Algebra, or in the first five sections of Robinson's University Algebra, or in the first twenty-six chapters of Hamblin Smith's Elementary Algebra.

In Arithmetic, and in the fundamental operations of Algebra, such as multiplication and division, the management of brackets, the solving of numerical and literal equations of the first and second degree, the combining and simplifying of fractions and radicals, the interpretation and use of negative quantities and of 0 and  $\infty$ , the putting of problems into equation—the student should have distinct notions of the meaning and the reason of all that he does, and be able to state them clearly in his own language; he should also be able to perform all those operations, even when somewhat complex, with rapidity, accuracy, and neatness; and to solve practical problems readily and completely. In his preparatory study he is advised to solve a great many problems, and to state and explain the reasons for the steps taken. In Geometry he should learn the definitions accurately, whether in the language of the text-book or not, and in proving a theorem or solving a problem he should be able to prove every statement made, and to go back step by step till he rests upon the primary definitions and axioms. He should be able to apply the principles of geometry to practical and numerical examples, to construct his diagrams readily, with rule and compass, and to find for himself the solutions of simple problems and the demonstrations of simple theorems. Besides oral recitation he is advised to write out his demonstrations, having equal regard to the matter and to the form of his statements; and when written he may carefully study them to make sure, first, that he has a complete chain of argument, and, secondly, that it is so arranged that without defect or redundancy one step follows as a logical consequence of another.

In place of these examinations certain certificates or diplomas are received as follows:

1. *Certificates* issued by the *Regents of the University* of the State of New York are accepted in place of the examinations in English Grammar, Geography, and Arithmetic.

2. *Certificates* issued by the *Superintendent of Public Instruction* of the State of New York, and *Diplomas* issued by the state normal schools, and by those academies and high schools of the

## J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTISE

State of New York whose requirements for graduation have been approved by the Faculty whose course of study requires Physiology and Plane Geometry, are accepted in place of examinations in all the subjects named above *except Algebra*.

3. *Diplomas* issued by the *Regents* to graduates from the high schools and academies of the State of New York are accepted in place of the examinations in all the subjects named.

Candidates must be of good moral character and at least sixteen years of age or of legal age.

**Examination for Admission to the Several Courses**—The requirements for admission to courses in *Agriculture, Architecture, Civil Engineering, and Mechanic Arts*, are the same as for admission to the University, but for admission to any of the other regular courses of the examinations, in addition to the *Primary Examination*, are as follows:

*To the Courses in Science, Science and Letters, Mathematics, Chemistry and Physics, and Anatomy and Chemistry.*—In addition to the *Primary Examination*, an examination in *any one* of the following subjects:

1. In *French*, the principles of French Grammar, the translation of French at sight, the translation of English into French, and the equivalent of two of Böcher's modern French plays and Laconbe's *Petite Histoire du Peuple Français*.

2. In *German*, the whole of Whitney's German Grammar, the translation of German at sight, the translation of English into German, and one hundred pages of Whitney's German including two of the longer prose extracts or an equivalent.

Any deficiency in the preparatory French or German may be made up, as extra work, existing with the regular classes in the University.

3. In *Mathematics*, Solid Geometry and Conic Sections, as much as is contained in Newcomb's *Elements of Geometry*, Advanced Algebra, as much as is contained in Olney's *University Algebra*, or in Newcomb's *Algebra*, and Trigonometry, Plane and Spherical, as much as is contained in Wheeler's *Elements of Trigonometry*, or in the unstated portions of Oliver, and Jones' *Treatise on Trigonometry*.

### COURSE IN ELECTRICAL ENGINEERING LEADING TO THE DEGREE OF BACHELOR OF SCIENCE

**FRESHMAN YEAR** (Fall Term)—French or German, 5, rhetoric, 2, geometry and trigonometry, 5, freehand drawing, 3, military drill, 2, hygiene, six lectures. (Winter Term)—French or German, 5, rhetoric, 2, algebra, 5, freehand drawing, 3, geometrical drawing, 3. (Spring Term)—French or German, 5, trigonometry, 5, descriptive geometry, text and drawing, 4, rhetoric, 2, military drill, 2.

**SOPHOMORE YEAR** (Fall Term)—French or German, 3, analytical geometry, 5, experiments in mechanics and heat, 3, descriptive geometry, text and drawing, 6, military drill, 2. (Winter Term)—French or German, 3, calculus, 5, electricity and magnetism, 3, chemistry, 3, shop-work, 3. (Spring Term)—Calculus, 5, acoustics and optics, 3, chemistry, 3, mechanical drawing, 3, shop-work, 3, military drill, 2.

**JUNIOR YEAR** (Fall Term)—Calculus, 5, physics, laboratory work, mechanics, 3, chemistry, laboratory work, 3, mechanism, 3, shop-work, 3. (Winter Term)—Mechanics of engineering, 5, physics, laboratory work (electricity, general experiments), chemistry, laboratory work, 3, mechanism, 3, shop-work, 3. (Spring Term)—Mechanics of engineering, 5, physics, laboratory work (acoustics and optics), 5, chemistry, laboratory work, 3, mechanical drawing, 3.

**SENIOR YEAR** (Fall Term)—Mechanics of engineering, 5, physics, lectures and laboratory work, testing of instruments and determinations of constants, 6, steam-engine, 3, mechanical drawing, 3. (Winter Term)—Physics, lectures and laboratory work (dynamo-machine, electrical motors, tests of efficiency), 5, steam-engine, 3, hydraulics, 5, mechanical drawing, 4, military science, 2. (Spring Term)—Physics, lectures and laboratory work (photoelectric tests of electric lamps, telegraph instruments, telegraph lines, and cables), 9, mechanical drawing, 3, preparation of thesis.

### UNITED STATES MILITARY ACADEMY, WEST POINT, N. Y.

**Department of Natural and Experimental Philosophy**—Peter S. Michie, Ph. D., Professor (14th April 1871). Captain Clinton B. Sears, A. B., Corps of Engineers, Assistant Professor (14th April 13th, 1882). 1st Lieutenant Ezra B. Fuller, 7th Cavalry, Assistant Professor (13th April 13th, 1882). 1st Lieutenant Arthur Murray, 1st Artillery, acting Assistant Professor. Department of Civil and Military Engineering—Justin B. Wierster, Professor (10th Sept. 1871). 1st Lieutenant Willard Young, Corps of Engineers, Assistant Professor. 1st Lieutenant Solomon W. Roessler, Corps of Engineers, acting Assistant Professor. Department of Mathematics—Eugene W. Bass, Professor (17th April 1871). 1st Lieutenant John P. Honeycutt, 1st Artillery, Assistant Professor to be relieved from duty at the Military Academy, Aug. 28, 1882. 1st Lieutenant William M. Medley, Ordnance Department. 1st Lieutenant William Crozier, Ordnance Department. 2nd Lieutenant Henry Ludlow, 3rd Artillery. 2nd Lieutenant Simon F. Massey, 5th Artillery, to be relieved from duty at the Military Academy, Aug. 28, 1882. 2nd Lieutenant Douglas A. Howard, 1st Artillery. 2nd Lieutenant James E. Runcie, 1st Artillery, acting Assistant Professor. Department of Chemistry, Mineralogy, and Geology—Samuel E. Tillman, Professor (11th April 1880). 1st Lieutenant John P. Wiser, 1st Artillery, Assistant Professor to be relieved from duty at the Military Academy, Aug. 28, 1882. 1st Lieutenant Joseph S. Cooper, 1st Artillery, to be relieved from duty at the Military Academy, Aug. 28, 1882. 2nd Lieutenant Lewis A. Levering, 4th Infantry, acting Assistant Professor. 1st Lieutenant William M. V. V. Ordnance Department, on temporary duty. Department of Practical Military Engineering, Military Signaling and Telegraphy—Captain William S. Stanton, Corps of Engineers, Instructor. 1st Lieutenant Henry S. Taber, Corps of Engineers, to be relieved from duty at the Military Academy, Aug. 28, 1882. Assistant Instructor—Antoine Laurent Mayer, 1st Artillery.

**WAR DEPARTMENT, OFFICE OF THE CHIEF SIGNAL OFFICER,  
WASHINGTON CITY.**

No. 1.

| NAME.                         | RANK.                                                              | POST OR STATION.                                                                                             |
|-------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 1. WILLIAM B. HAZEN .....     | Brig. & Bvt. Maj.-<br>Genl., Chief Sig<br>Officer, U.S. Army       | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 2. JAMES W. POWELL, jr. ....  | Capt. 8th Inftry.,<br>Acting Sig. Officer                          | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 3. WILLIAM H. CLAPP ... ..    | Capt. 16th Inftry.,<br>Acting Sig. Officer                         | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 4. GEORGE T. OLMSTED .....    | Capt. U.S. Army,<br>Acting Sig. Officer                            | Prescott, Ariz.                                                                                              |
| 5. SAMUEL M. MILLE .....      | Capt. 5th Arty.,<br>Acting Sig. Officer                            | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 6. JOHN P. STORY .....        | 1st Lieut. 4th Arty.,<br>Acting Sig. Officer                       | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 7. RICHARD P. STRONG .....    | 1st Lieut. 4th Arty.,<br>Bvt. Capt. U.S.A.,<br>Acting Sig. Officer | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 8. H. H. C. DUNWOODY ....     | 1st Lieut. 4th Arty.,<br>Acting Sig. Officer                       | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 9. ROBERT CRAIG .....         | 1st Lieut. 4th Arty.,<br>Acting Sig. Officer                       | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 10. LOUIS V. CAZIARC .....    | 1st Lieut. 2nd Arty.,<br>Acting Sig. Officer                       | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 11. CHAS. E. KILBOURNE ....   | 1st Lieut. 2nd Arty.,<br>Acting Sig. Officer                       | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 12. Adolphus W. Greeley ....  | 1st Lieut. 5th Cav<br>Acting Sig. Officer                          | Lady Franklin Bay, Grinnell Land (in com-<br>mand of expedition).                                            |
| 13. FREDERICK K. WARD ....    | 1st Lieut. 1st Cav<br>Acting Sig. Officer                          | Fort Myer, Virginia.                                                                                         |
| 14. P. HENRY RAY .....        | 1st Lieut. 8th Inftry,<br>Acting Sig. Officer                      | Point Barrow, Alaska (in command of expedi-<br>tion)                                                         |
| 15. ERNEST A. GARLINGTON ..   | 1st Lieut. 7th Cav.,<br>Acting Sig. Officer                        | Office of Chief Sig. Officer, Washington, D.C.<br>(in command of relief expedition to Lady<br>Franklin Bay). |
| 16. CHARLES A. BOOTH .....    | 1st Lieut. 7th Inftry.,<br>Acting Sig. Officer                     | Bismarck, Dak.                                                                                               |
| 17. THOMAS M. WOODRUFF ..     | 1st Lieut. 5th Inftry,<br>Acting Sig. Officer                      | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 18. JAMES ALLEN .....         | 1st Lieut. 3rd Cav<br>Acting Sig. Officer                          | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 19. JAMES B. LOCKWOOD .....   | 1st Lieut. 23rd Inf<br>Acting Sig. Officer                         | Lady Franklin Bay, Grinnell Land.                                                                            |
| 20. FREDK. F. KISLINGSBURY .. | 2nd Lieut. 1st Inf.<br>Acting Sig. Officer                         | Lady Franklin Bay, Grinnell Land.                                                                            |
| 21. JAMES A. SWIFT .....      | 2nd Lieut. Sig.<br>Corps, U.S. Army                                | Fort Myer, Virginia.                                                                                         |
| 22. LEROY E. SEBREE .....     | 2nd Lieut. Sig.<br>Corps, U.S. Army                                | San Antonio, Texas.                                                                                          |
| 23. JOSEPH S. POWELL .....    | 2nd Lieut. Sig.<br>Corps, U.S. Army                                | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 24. WILLIAM A. GLASSFORD ..   | 2nd Lieut. Sig.<br>Corps, U.S. Army                                | Leavenworth, Kansas.                                                                                         |
| 25. WILLIAM D. WRIGHT ....    | 2nd Lieut. Sig.<br>Corps, U.S. Army                                | Office of Chief Sig. Officer, Washington, D.C.                                                               |
| 26. FRANK GREENE .....        | 2nd Lieut. Sig.<br>Corps, U.S. Army                                | Dayton, Washington, D.C.                                                                                     |
| 27. ROBERT B. WATKINS ....    | 2nd Lieut. Sig.<br>Corps, U.S. Army                                | Fort Myer, Virginia.                                                                                         |
| 28. JOHN C. WALSH .....       | 2nd Lieut. Sig.<br>Corps, U.S. Army                                | Fort Myer, Virginia.                                                                                         |

WAR DEPARTMENT, No. 2.

LIST OF U.S. MILITARY TELEGRAPH LINES OPERATED AND CTROLLED BY THE SIGNAL SERVICE U.S. ARMY SHOWING NUMB OF STATIONS AND MILES OF WIRE IN EACH SECTION.

I. WASHINGTON AND IDAHO DIVISION.

| STATION.                | STATE.          | MILES. |
|-------------------------|-----------------|--------|
| Tatoosh Island .....    | Wash. Ter. .... | 80     |
| Neah Bay .....          | " .....         |        |
| Hoko .....              | " .....         |        |
| Pisht .....             | " .....         |        |
| Crescent Bay .....      | " .....         |        |
| Port Angeles .....      | " .....         | 68     |
| Dayton .....            | Wash. Ter. .... |        |
| Lewiston .....          | Idaho ..        |        |
| St. Lapwai .....        | " .....         | 91     |
| St. Spokane .....       | Wash. Ter. .... |        |
| Spokane Falls.....      | " .....         | 28     |
| St. Coeur d'Alene ..... | Idaho ..        |        |
| Astoria.....            | Oregon ..       |        |
| St. Stevens .....       | " .....         |        |
| St. Canbre .....        | Wash. Ter. .... |        |

II. OREGON DIVISION.

|                      |            |     |
|----------------------|------------|-----|
| St. Bidwell .....    | Cal. ....  | 234 |
| Loftons Rancho ..... | Oreg. .... |     |
| St. Klamath .....    | " .....    |     |
| Ashland .....        | " .....    |     |

III. NORTH-WEST DIVISION.

|                       |            |     |
|-----------------------|------------|-----|
| St. Maginnis .....    | Mont. .... | 315 |
| Poplar River .....    | " .....    |     |
| St. Buford .....      | Dak. ....  |     |
| Glendive .....        | Mont. .... | 55  |
| Bismarck.....         | Dak. ....  |     |
| St. Yates .....       | " .....    | 4   |
| St. Bennett.....      | Dak. ....  |     |
| St. Sully .....       | " .....    | 15  |
| Deadwood .....        | Dak. ....  |     |
| St. Meade .....       | " .....    | 30  |
| St. Custer .....      | Mont. .... |     |
| Terry's Landing ..... | " .....    | 206 |
| St. Assinniboine..... | Mont. .... |     |
| St. Benton .....      | " .....    |     |
| St. Shaw .....        | " .....    | 23  |
| Helena .....          | " .....    |     |
| St. Sisseton.....     | Dak. ....  | 68  |
| Webster .....         | " .....    |     |
| St. Totten .....      | Dak. ....  |     |
| Larimore .....        | " .....    |     |

IV. DEPARTMENT OF THE MISSOURI.

|                     |                |     |
|---------------------|----------------|-----|
| Dodge City .....    | Kans. ....     | 430 |
| Fort Supply .....   | Ind. Ter. .... |     |
| Cantonment .....    | " .....        |     |
| Fort Reno .....     | " .....        |     |
| Fort Sill .....     | " .....        |     |
| Henrietta .....     | Texas .....    | 121 |
| Fort Elliott.....   | " .....        |     |
| Fort Stanton .....  | N. Mex. ....   |     |
| Fort Craig .....    | " .....        | 9   |
| San Marcial .....   | N. Mex. ....   |     |
| Fort Union.....     | " .....        | 15  |
| Watrous .....       | Cal. ....      |     |
| Fort Lewis .....    | " .....        | 8   |
| Durango .....       | Cal. ....      |     |
| Uncompahgre.....    | " .....        | 3   |
| Montrose .....      | " .....        |     |
| Fort Wingate.....   | " .....        | 119 |
| Wingate .....       | " .....        |     |
| Fort Bridger .....  | Wyo. ....      |     |
| Fort Thornbury..... | Utah .....     |     |



WAR DEPARTMENT, No. 2—continued.

CALIFORNIA AND ARIZONA DIVISION.

| STATE.                 | STATION.     | MILES.    |
|------------------------|--------------|-----------|
| Fort Verde .....       | Ariz. ....   | 227       |
| Prescott .....         | " .....      |           |
| Wickenburg .....       | " .....      |           |
| Phoenix .....          | " .....      |           |
| St. McDowell .....     | " .....      |           |
| Maricopa .....         | " .....      | 220       |
| St. Apache .....       | Ariz. ....   |           |
| St. Thomas .....       | " .....      |           |
| San Carlos .....       | " .....      |           |
| St. Grant .....        | " .....      |           |
| Wilcox .....           | " .....      | 60        |
| St. Bowie .....        | " .....      |           |
| St. Bayard .....       | N. Mex. .... |           |
| St. Cummings .....     | " .....      |           |
| Florida Station .....  | " .....      |           |
| Tucson .....           | Ariz. ....   | 7 Teleph. |
| St. Lowell .....       | " .....      | line.     |
| Huachuca Station ..... | Ariz. ....   | 7 Teleph. |
| St. Huachuca .....     | " .....      | line.     |

TEXAS DIVISION.

|                       |             |                   |
|-----------------------|-------------|-------------------|
| Fort Stockton .....   | Texas ..... | 70                |
| Fort Davis .....      | " .....     |                   |
| Maria .....           | " .....     |                   |
| Rio Grande City ..... | Texas ..... | 100               |
| Brownsville .....     | " .....     | 45                |
| Coleman .....         | Texas ..... |                   |
| St. Coucho .....      | " .....     |                   |
|                       |             | TOTAL MILES, 2660 |

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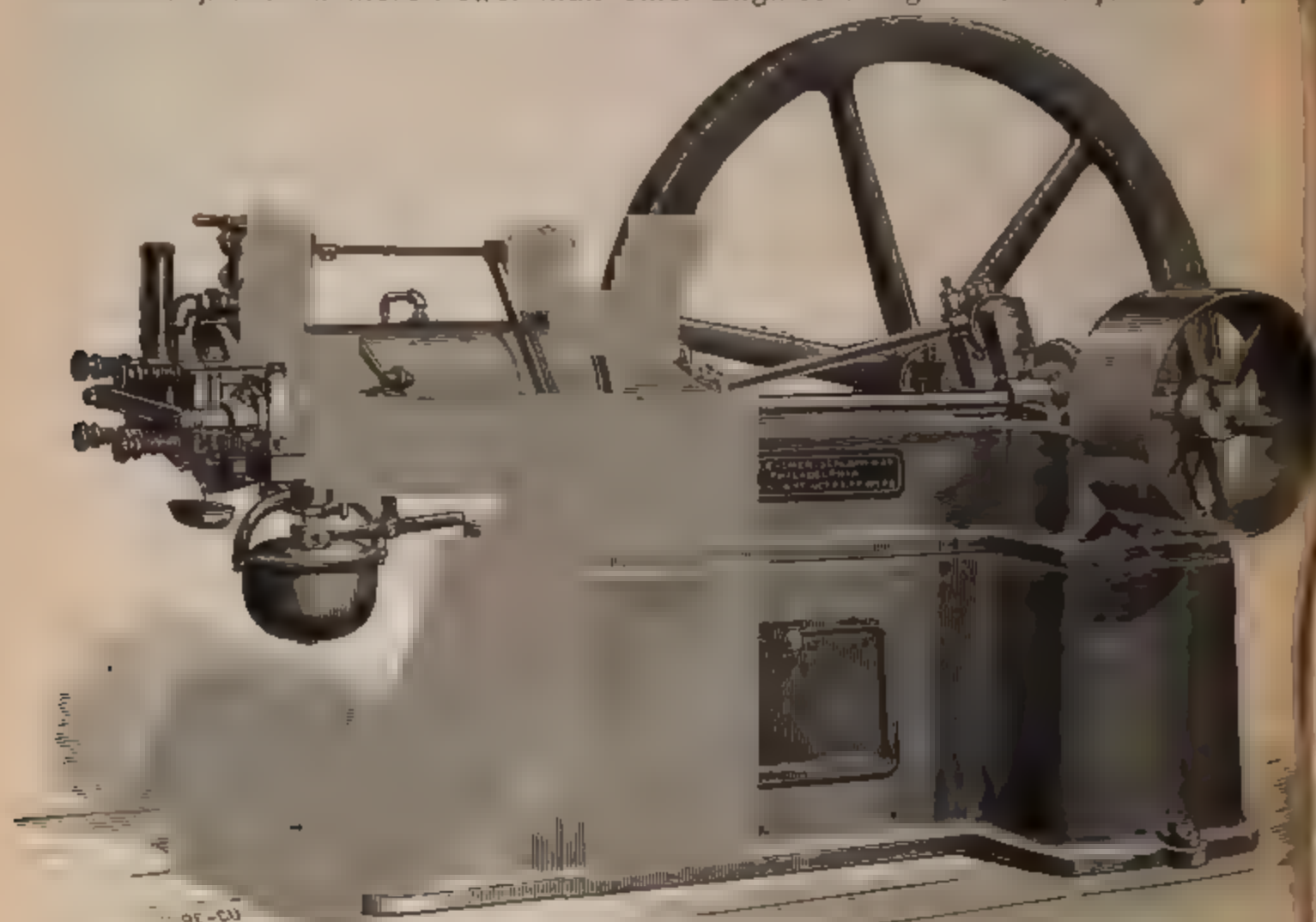
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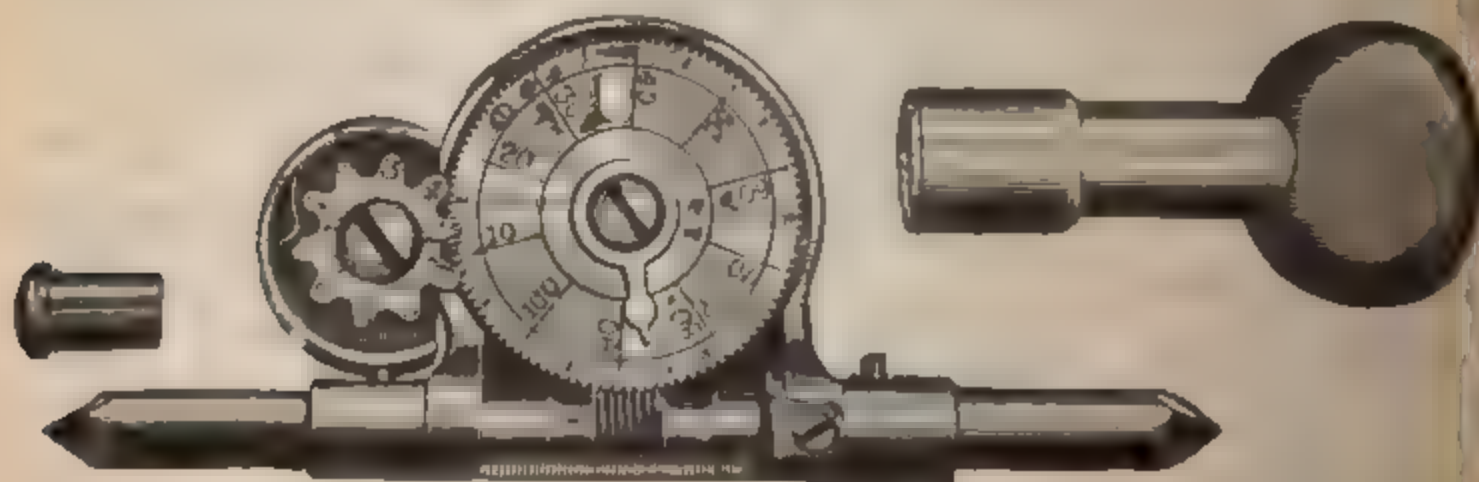
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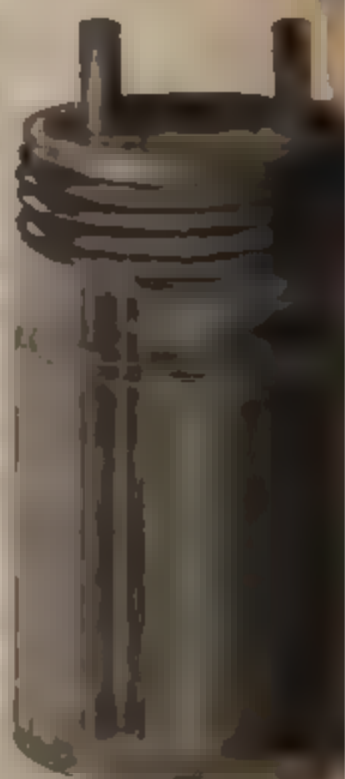
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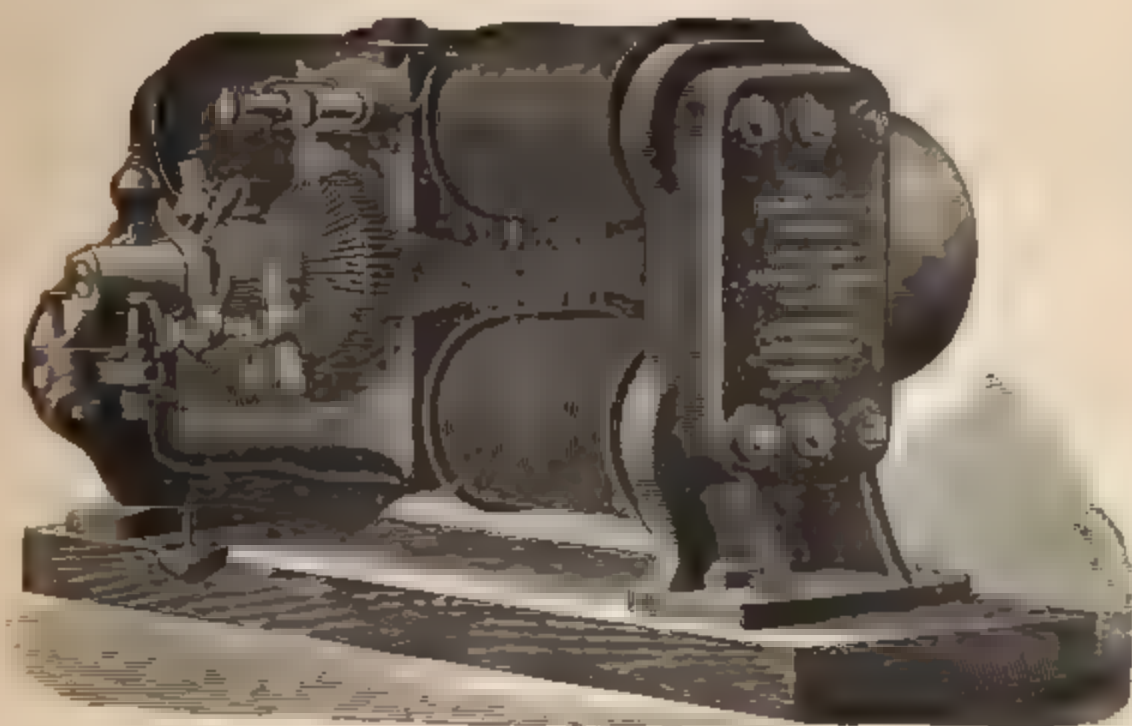
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# PRÉFACE.

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AU moment de présenter la troisième Édition de L'ANNUAIRE UNIVERSEL D'ÉLECTRICITÉ à la confrérie scientifique et au public en général, nous saisissons l'opportunité pour expliquer les modifications importantes que nous avons apportées à l'Édition précédente. Les soins les plus attentifs ont été apportés à la compilation, de manière à donner, autant que cela était possible, satisfaction à différentes manières de voir de tous les intéressés.

Les sections Anglaise, Américaine et Continentale ont été disposées de manière à pouvoir être vendues séparément.

Les listes de professions ont été revisées, et condensées avec soin. Dans la portion Britannique, les sections de professions de Londres et de la province ont été réunies en une seule ; et il s'est trouvé indispensable, étant donné l'augmentation sérieuse des affaires purement électriques, d'éliminer une grande partie des professions qui s'y rapportaient le plus indirectement.

La section Américaine contient de nombreuses et importantes additions, ainsi qu'une très-grande augmentation dans le nombre des adresses.

La section Française dans laquelle est comprise la Belgique, a été complétée par l'addition d'une liste alphabétique.

Rien n'a été négligé pour rendre cette Edition aussi correcte et intelligente que possible ; nous regrettons que beaucoup de personnes, soit dans la professionnelle, soit dans la partie commerciale, ne puissent pas trouver le temps de corriger et nous retourner nos circulaires. Tous ceux dont le nom figure dans la seconde Édition, et toutes les nouvelles maisons et industries, dans les différents pays, ont reçu au moins une circulaire par la poste ; la plus grande proportion d'entre eux ont reçu une visite personnelle ; et ceux dont le nom se trouvera dans l'ouvrage ou incorrectement désigné n'auront à s'en prendre qu'à eux mêmes pour avoir manqué d'accomplir une formalité bien simple.

D'autre part, nous remercions sincèrement beaucoup de nos souscripteurs et correspondants pour les renseignements valables qu'ils ont bien voulu nous communiquer ce qui n'a pas peu contribué à l'exactitude de l'ouvrage que nous avons maintenant le plaisir de placer devant le public.

J. A. BERLY,

LONDRES, 31 Décembre, 1883.

C.E., A.S.T.E., et



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# **ANNUAIRE ELECTRIQUE,**

**J. A. BERLY.**

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## **LISTE ALPHABÉTIQUE.**

---

### **A.**

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**B.**

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Digne, J., modèles, rue de Lancry, 56, Paris.  
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- Domange**, Lemierre et Cie. (succ. de E. Scelles), courroies de transmission, boul. Voltaire, 74, Paris.  
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**Dorizon et fils**, tourneurs en métaux, rue St. Sabin, 58, Paris.  
**Doucc et Cie.**, électricité appliquée aux sciences, rue de Rivoli, 116, Paris.  
**Doulton et Cie.**, vases en grès, rue Paradis, 6, Paris.  
**Drault**, argenteur et doreur, boul. Richard Lenoir, 102, Paris.  
**Dronier**, P., allumeurs et extincteurs électriques, rue des Fêtes, 63, Belleville, Paris.  
**Dubos**, Ch., appareils électro médicaux, avenue de la Motte Piquet, 41, Paris.  
**Duboscq.**, J. et A., lumière électrique, rue de l'Odéon, 21, Paris.  
**Duboscq**, père et fils, électriques et régulateurs, rue des Fossés, St. Jacques, 11, Paris.  
**Duboscq**, Jules, lumière électrique, rue Monsieur-le-Prince, 30, Paris.  
**Dubourgnet**, A., tourneur en métaux, boul. Magenta, 33, bis, Paris.  
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**Ducommun**, éclairage électrique, boul. Magenta, 18, Paris.  
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**Ducrotet E. et Cie.**, appareils servant aux mesures électriques, rue Claude Bernard, 75, Paris.  
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**Dufoulon et Regniet**, nickeurs et nickelure, rue Portefoin, 2, Paris.  
**Dufour**, jeune et fils, courroies de transmission, rue St. Pierre de Vaise, 34, Lyon.  
**Dumas**, E. et Cie., courroies de transmission, rue de la République, 80, Marseille.  
**Dumoulin-Froment**, appareils servant aux mesures électriques, rue Notre Dame des Champs, 85, Paris.  
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**Encausse et Canesie**, appareils électro médicaux, rue Rochechouart, 57, Paris.  
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**Esquerré-Caballé**, matériel de lignes télégraphiques, avenue des Champs Elysées, 28, Paris.  
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**Famezelle-Laviguerie**, courroies de transmission, Amiens.  
**Farcot**, Joseph, machines à vapeur, av. de la Gare, 13, St. Ouen, Paris.  
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**Faucon frères**, phares, rue de la Douane, 24 et quai de Valmy, 41, Paris.  
**Faure Electrical Accumulator Co.**, avenue de l'Opéra, 5, Paris.  
**Faure et Cie.**, tubes et tuyaux, rue Buffaut, 26, Paris.  
**Faure et Gautier**, J. B. fils, plomb, rue Grégnan, 65, Marseille.  
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**Felten et Guillaume**, télégraphie, rue des Bourdonnais, 30, Paris.

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 Fernique, ingénieur électricien, rue de Flaurus, 31, Paris.  
 Ferron, Alex., outils pour électriciens, rue des Gravilliers, 11, Paris.  
 Festugière, tubes et tuyaux, rue du Terrage, 4 Paris.  
 Feuillet, D. Frères, cylindres en verre, rue des Guillemites, 3 à 7, Paris.  
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 Filliot, I., sonneries et signaux électriques, rue de Courcelles, 15, Paris.  
 Fischer et Cie., caoutchouc et gutta percha bruts, rue de la Verrerie, 43, Paris.  
 Flechet, L. et Cie, poteaux télégraphiques en fer, rue Laissez, Liège.  
 Flogny, E. F. L., moteurs électriques, rue Lemerrier, 81, Paris.  
 Folie et Denamur, nickeleurs et nickelure, Quai Jemmapes, 82, Paris.  
 Follain, modèles, rue du Chemin-Vert, 121, Paris.  
 Fonda, J. B., argenteur et doreur, à Vilvorde, Belgique.  
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 Fontaine, H., éclairage électrique, rue Drouot, 15, Paris.  
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 Franck, zinc (mines et usines), avenue de Versailles, 6, Paris.  
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 François, Labbé, tubes et tuyaux, boul. Richard Lenoir, 62, Paris.  
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 Galante, H., et Cie, ébonite et vulcanite, rue de l'Ecole de Médecine, 2, Paris.  
 Gallais, A., électricité appliquée aux sciences, &c., boul. de la Villette, 73, Paris.  
 Gallet, Victor, coffre-forts à sonneries électriques, boul. Magenta, 60, Paris.  
 Gallien et Charton, courroies de transmission, quai de la Charité, 2, Lyon.  
 Gandillot et Cie, tubes et tuyaux, rue des Vinaigriers, 37 et 38, Paris.  
 Garnier, amiante, rue Hauteville, 18 bis, Paris.  
 Garnier, H., nickeleur et nickelure, rue Morère, 15 bis, Paris.  
 Garnier, P., sonneries et signaux électriques, rue Taitbout, 6 et 16, Paris.  
 Gary, horlogerie électrique, rue Sainte Eugénie, 22, Paris.  
 Gaspard et Belle, nickel, rue de Saintonge, 62, Paris.  
 Gatine, L., mercure, rue des Rosiers, 23, Paris.  
 Gaubret, P. T., télégraphie, rue de Grenelle, 10, Paris.  
 Gaulard, L., piles électriques, rue Nollet, 65, Paris.  
 Gautier, E., sonneries et signaux électriques, rue de Varennes, 64, Paris.  
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 Geneste, Herscher et Cie., moteurs électriques, rue du Chemin Vert, 42, Paris.  
 Géraudy, F., ingénieur électricien, Paris.  
 Gérard et Cie., nickeleurs et nickelures, rue Charlot, 62, Paris.  
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 Gertens, H., sonneries et signaux électriques, rue Rochecourt, 17, Paris.  
 Gettiffe et Simon, instruments pour la physique et le chimie, rue du Turbigo, 87, Paris.  
 Geyter, G. de, ingénieur électricien, Monsion, Belgique.  
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 Gilbert, zinc, rue Ste. Croix de la Bretonnerie, 20, Paris.  
 Girard et Cie, lampes électriques et régulateurs, boul. Henry IV., 44, Paris.

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 boussoles, faub. St. Martin, 52, Paris.  
 t et Cie., maillechort, rue des Marais, 66, Paris.  
 , F., brevets d'invention, cours Morand, 36, bis. Lyon.  
 , Charles R., éclairage électrique, boul. des Capucines, 35, Paris.  
 ., jouets électriques, rue Pigalle, 24, Paris.  
 rf, Silv., ingénieur électricien, quai Jemmapes, 166, Paris.  
 l, R. et Cie., caoutchouc, faub. St. Martin, 76, Paris.  
 r, électricité appliquée aux sciences, etc., rue Michel Lecomte, 23, Paris.  
 x, A., instruments pour la physique et la chimie, rue de Bellechasse, Paris.  
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 Compagnie des Télégraphes du Nord, rue d'Antin, 3, Paris.  
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 meries et signaux électriques, rue de la Roquette, 75, Paris.  
 ourneurs en métaux, rue Chapon, 21, Paris.  
 t, E., papier bande pour télégraphie, boul. Beaumarchais, 38, Paris.  
 a. M., Persan Beaumont, Seine-et-Oise.  
 . G., aux Vieux Fort Vincennes, Paris.  
 rères, nickeleurs et nickelure, rue du Temple, 114, Paris.  
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 : et Cie., tubes et tuyaux, quai Jemmapes, 66, Paris.  
 ctricité appliquée aux sciences, etc., rue Hippolyte Lebas, 6, Paris.  
 Schmidt, laminoirs, rue Oberkampf, 123, Paris.  
 st Vayer, sonneries et signaux électriques, rue Turpin, 28, Lyon.  
 aint, chappes et pierres pour instruments de précision, rue Neuve Saint Merri, 11, Paris.  
 , E., sonneries et signaux électriques, rue de Clignancourt, 22, Paris.  
 Cie., tubes et tuyaux, rue Basse, 15, Lille.  
 Ch., sonneries et signaux électriques, rue de Naples, 72, Paris.  
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 F., appareils électro médicaux, rue du Temple, 55, Paris.  
 piles électriques, rue Daguerre, 57, Paris.  
 , Leprince, électricité appliquée aux sciences, etc., rue Montmorency, 67, Paris.  
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 ., caoutchouc et gutta percha bruts, rue Vivienne, 40, succursale, boul. Sébastopol, 129, Paris.  
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 C., tubes et tuyaux, rue de la Verrerie, 58, Paris.  
 layet et Lignereux succ.), machines magnéto électriques, dynamo électriques, avenue de la Motte  
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 Héricourt frères, tourneurs en métaux, rue de Temple, 117, Paris.  
 Hermendinger, E. fils de cuivre et laiton (fab.), faub. du Temple, 16, Paris.  
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 Hutier, fils de fer, boul. Mémilmontant, 101, Paris.  
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 Hurta et Hautin, moteurs électriques, rue Saint Maur, 54, Paris.  
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 Joly, Auguste, horlogerie électrique, rue de la République, 10, Indre-et-Loire.  
 Jordery, C., télégraphie appareils et fournitures de, rue Montagne, 26, Paris.  
 Jourdan, Th., piles et batteries électriques, rue Thiers, 40, Marseille.  
 Journaux, J., téléphones, rue des Cyennes, 56, Paris.  
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- Lavialle, P. fils, caoutchouc et gutta percha bruts, rue Sévigné, 30, Paris.
- Lavie et Cie., minium, rue du Hautoir, Bordeaux.
- Lavioirney, moteurs à gaz, boul. de la Villette, 234, Paris.
- Leber, sonneries et signaux électriques rue Dulong, 29, Paris.
- L'Eclairage électrique Société Anonyme, au Capital de 6,550,000 francs, machines dynamo électriques, 250, rue Lecourbe, Paris.
- Lebert, instruments de précision, &c., boul. St. Courcelles, 17, Paris.
- Leblanc, J., articles en ivoire, bois, pour appareils électriques, rue Boutebrie, 14, Paris.
- Le Brun, électricité appliquée à l'industrie, &c., rue Pastourelles 32 et 34, Paris.
- Lecherf, G., argentier et doreur, rue Haute, 88, Bruxelles Belgique.
- Le Chippey, jouets électriques Faub. St. Martin, 64, Paris.
- Leclanché, piles électriques, rue Fromentin, 9, Paris.
- Leclerc, E., argentier et doreur, rue Bonaparte, 58, Paris.
- Le Comte de Douhet, lumière électrique, avenue Marceau, 68, Paris.
- Leacroat, E., никелеur et nickelure, rue St. Maur, 60, Paris.
- Ledoux, G. et Bar, caoutchouc et gutta percha bruts, boul. Sébastopol, 46, Paris.
- Leduc, Frédéric, ingénieur électricien, rue Saxe Coburg, 36, Bruxelles.
- Lefèvre, télégraphie, rue du Repos, 31 et 33, Paris.
- Lefournier et Maréchal, outils pour électriciens, boul. Sébastopol, 54, Paris.
- Légay fils, télégraphie, rue Laugier, 42, Paris.
- Léger frères, courroies de transmission, place des Hospices, 7, Lyon.
- Légras, Fr. Th., machines magnéto électriques et dynamo électriques, avenue de Paris, 18, St. Denis (Seine).
- Légris, tourneur en métaux, rue du Temple, 145, Paris.
- Léguay, E., aimants, rue de la Tombe-Issoire, 79 et 81, Paris.
- Léguay, V. Hector et fils, appareils servant aux mesures électriques, rue Monsieur-le-Prince, 53, Paris.
- Lehmann frères, phosphor bronze, rue St. Maur, 86, Paris.
- Lejeune, A., argentier et doreur, rue du Temple, 83, Paris.
- Lièvre, A., électricité appliquée à l'industrie, &c., rue des Coutures-St.-Gervais, 6, Paris.
- Lemaire et Cie. (orfèvrerie Christoffe), argentiers et doreurs, boul. des Italiens, 33, Paris.
- Lemaire et Degueldre, никелеurs et nickelure, rue Charlot, 77, Paris.
- Lemoine, fils de fer, impasse Marcés, 11, rue Popincourt, 39, Paris.
- Lemoine, A., Horlogerie électrique, rue Blanche, 7, Paris.
- Lemoine, J., sonneries et signaux électriques, rue des Pêcheurs, 6, Mezières.
- Lemonnier, P., ingénieur électricien, avenue de Suffren, 26, Paris.
- Lenzewski, Lad. de et Cie., matériel de lignes télégraphiques, rue de la Montagne Sainte-Genève, 25, Paris.
- Levalé, A. et Cie., cylindres en verre, rue Notre-Dame-de-Nazareth, 31, Paris.
- Le Nickel, nickel, rue de la Chaussée-d-Antin, 38, Paris.
- Léop, Charles, sonneries et signaux électriques, rue d'Arenberg, 36, Bruxelles.
- Lépaute, Henry, phares, rue Lafayette, 6, Paris.
- Lépinette et Rabilloud, brevets d'invention, avenue de Saxe, 66, Lyon.
- Léplat, O., minium, rue de la Chapelle, 46, Paris.
- Leventhal, H., caoutchouc et gutta percha bruts, rue Montmorency, 16, Paris.
- Léonard fils et Benjamin, caoutchouc, rue de Trévise, 49, Paris.
- Le Roy, Ch., électricité appliquée à l'industrie, &c., rue du Maine, 3, Paris.

Le Sieur, électricité appliquée à l'industrie, &c., rue des Deux Portes, 6, Paris.  
 Lestrade, F. de, caoutchouc, rue Chevalier Rose, 27, Marseille.  
 Letourneau, télégraphier, avenue Montagne, 37, Paris.  
 Létrange, L. et Cie, plomb, rue des Haricottes, 1, Paris.  
 Leune, globes et lanternes, rue des Deux-Portes, 29 et 31, Paris.  
 Le Vavasseur et Quachet, jouets électriques, rue de Rivoli, 154, Paris.  
 Levent, J., écharge électrique, &c., boul. Magenta, 98, Paris.  
 Lévy, A., caoutchouc, rue Hautville, 34, Paris.  
 Lévy, E., *(Brevets F. Carré)*, charbons électriques, avenue du Maine, 67, Paris.  
 Lévy, Martin et Plain hault, nickel, rue Port Levée, 16, Paris.  
 Le Tellier et Verstraet, caoutchouc, rue Turbigo, 47, Paris.  
 L'Hôte, A., piles électriques, rue Marigny, 7, Paris.  
 Lhuillien, Vve et Barbanchon, spécialité d'aiguilles aimantées, rue Réaumur, 98, Paris.  
 Liberge, L., tubes et tuyaux, Imp. du Moulin-Joly, 16, Paris.  
 Labin, François, ingénieur électricien, rue des Champs, 86, Gand (Belgique).  
 Lichtenfelder, G., paratonnerres, avenue de la Grande Armée, 25, Paris.  
 Liebermann, J., courroies de transmission, boul. du Temple, 18, Paris.  
 Liepmann, Henri, électricien ingénieur, rue Montyon, 11, Paris.  
 Lalvan, E. aîné, courroies de transmission, boul. de la Paix, 14 bis, Marseille.  
 Lipman, C., ingénieur électricien, Paris.  
 Lippert et Petitqueux, sonneries et signaux électriques, rue Bachelet, 21, Paris.  
 Liassaut et Cossou, verreries et vases pour chimistes et électriciens, rue Martel, 12, Paris.  
 Lizeray, A., charbons électriques, rue des Bois-Belleville, 18, Paris.  
 Lochet-Labye De, téléphones et microphones, rue de l'Événement, 66, Paris.  
 Loiseau, Ach., appareils servant aux mesures électriques, rue Fontaine au Roi, 57, et rue Richelieu, 20, Paris.  
 Loiseau, Ed., sonneries et signaux électriques, boul. d'Enfer, 101, Paris.  
 Lollier et Fils, vases en grès, rue des Trois-Mages, 33, Marseille.  
 Lontin P., ingénieur électricien, Paris.  
 Loppens, A., avertisseurs d'incendie, Gosselies, Hainaut, Belgique.  
 Loreau, J., articles en ivoire, bois, pour appareils électriques, rue de Turenne, 1, Paris.  
 Loret, électricité appliquée à l'industrie, &c., rue Mignon, 5, Paris.  
 Louband Fils, verreries et vases pour chimistes et électriciens, Quai de la Guillotière, 27, Lyon.  
 Loza, sonneries et signaux électriques, rue de Puebla, 28, Lille.  
 Lugult Fils, caoutchouc, rue Bouguère, 44, Bordeaux.  
 Luissé Fr., allumeurs et extincteurs électriques, rue des Grands-Augustins, 2, Paris.  
 Luizard, L., piles électriques, rue d'Arcole, 21, Paris.  
 Lutz, instruments pour la physique et la chimie, boul. St. Germain, 32, Paris.

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Mackenstein, H., ébénistes pour boîtes d'instruments, rue Saint-Jacques, 71, Paris.  
 Maes frères, globes et lanternes, cours des Petites-Ecuries, 9, Paris.  
 Mager, A., caoutchouc manufacture, rue d'Aboukir, 11, Paris.  
 Magne, Ch., paratonnerres, Av. du Trocadéro, 7, Paris.  
 Magnin, J. et Cie, courroies de transmission, Quai de Serin, 55, Lyon.  
 Maguin, A. manganèse, rue Alibert, 10, Paris.  
 Maïche, L. et Cie, machines électriques voir index des annonces et téléphone, rue Louis le Comte, Paris. Voir index des annonces.  
 Maillé, nickelateur et nickelure, avenue de la République, 7, Paris.  
 Maire, J., argenture et doreur, place du Palais-de-Justice, 3, Bruxelles, Belgique.  
 Mackenstein, télégraphie, rue St. Jacques, 71, Paris.  
 Malardot, Eugène, ingénieur électricien, rue Bertrand, 24, Paris.  
 Maldant, E. et Cie, téléphones et microphones, rue d'Armaillé, 21, Paris.  
 Malhé, G. et Gérard, nickelateurs et nickelure, boul. Richard-Lenoir, 136, Paris.  
 Mandroux, L. V., télégraphie, rue Caumartin, 71, Paris.  
 Mangelot, piles électriques, rue d'Ulm, 44, Paris.  
 Mangin, L., timbres pour sonneries, boul. Richard Lenoir, 17, Paris.  
 Mappin et Webb, de Londres et Sheffield. *(A. Dootte et Cie)*, argenture et doreurs, rue Vivienne, 2, Paris.  
 Marais, sonneries et signaux électriques, rue de Bar, 49, Rouen.  
 Marc J., télégraphie, rue Parées Marais, 12, Paris.  
 Marchand, E., tubes et tuyaux, Contour de l'Hôtel de Ville, 10, Lille.  
 Marcillac, Paul, ingénieur électricien, rue Jaubert, 6, Paris.  
 Marcillac, télégraphie, l'Assage-Bosquet, 19, Paris.  
 Martel et Fils, sonneries et signaux électriques, rue Meyerbeer, 5, Paris.  
 Martine, J. B., courroies de transmission, rue Quenette, 5, Lille.  
 Martine, Mme., caoutchouc, rue de Roubaix, 15, Lille.  
 Martiny, J. L. et Cie, caoutchouc, rue des Petites-Ecuries, 13, Paris.  
 Mascareilly succ. A. Maire, vases en grès, rue St. Ferreol, 77, Marseille.  
 Masson, courroies de transmission, rue Leprieux, 52, Paris.  
 Masson, F., laminoirs, rue de Châlons, 38, Paris.  
 Massenet et Cie, galvanoplastie, rue du Faubourg St. Dennis, 64, Paris.  
 Mathelin et Garnier, tubes et tuyaux, iv. Douvresul, 125, 127, Paris.  
 Mathieu, L. A., piles et batteries électriques, rue de Saintonge, 20, Paris.

Mathurin, Barbier, vases poreux, rue des Quatre Vents, 6, Paris.  
 Mathien Peillon, tubes et tuyaux, rue Sainte Hélène, 44, Lyon.  
 Maubert, Nickeleur et Nickelure, rue Grange aux-Belles, 35, Paris.  
 Magé, J., Nickeleur et Nickelure, rue Gambey, 22, Paris.  
 Maier, H., câbles et fils isolés, rue du Théâtre, 7, Grenelle.  
 Maier, Henri, ingénieur électricien, rue d'Enghien, 6, Paris.  
 Maisier, fermetures électriques, rue Montbaron, 16, Versailles.  
 Mercadier, appareils servant aux mesures électriques, rue de Bourgoyno, 65, Paris.  
 Mercadier, E., ingénieur électricien, rue Descartes, 21, Paris.  
 Mercier, T., tubes et tuyaux, boul. Magenta, 31, Paris.  
 Meritens, E. de., électricité appliquée à l'industrie, &c., rue Boursault, 44, Paris.  
 Mévior, A. télégraphie, rue de Malte, 19, Paris.  
 Meyer, B., ingénieur électricien, boul. St. Denis, 1, Paris.  
 Meyer, Bernard, télégraphie, rue Portalès, 12, Paris.  
 Meyer et Cie., globes et lanternes, rue de Vaugirard, 225, Paris.  
 Moynier, J. A., minium, rue Lafayette, 85, Paris.  
 Michaels, J. P., moteurs électriques, av. de l' Opéra, 45, Paris.  
 Michailovitch, Paul Goloubitzky, téléphones ataliers, M. de Branville, rue de la Montagne, 25, Ste. Geneviève; Représentant, M. Kronchkoll, rue Cassini, 6. Inventeur gouvernement de Kalouga, Taroussa, Russie.  
 Michaud A., sonneries électriques, rue Basse, 64, Lille.  
 Michaud, P., sonneries et signaux électriques, rue Lafon, 4, Marseille.  
 Michel, V., galvanoplastie, rue Duguay-Trouin, 3, Paris.  
 Mignon et Rouart, machines magnéto électriques et dynamos électriques, boul. Voltaire, 137, Paris.  
 Mignot, O., mais. Doisy, E. L'excellent sucr., argenteurs et doreurs, rue de Saintone, 47, Paris.  
 Mignot, P., piles électriques, pl. Lafayette, 109, Paris.  
 Miguel, J., moteurs électriques, Cours d'Alsace-Lorraine, 110, Bordeaux.  
 Mide fils. et Cie., Soc., éclairage électrique, rue Laugier, 26, Paris.  
 Millet, H. E., vases en grès, rue de la Roquette, 62 et 64, Paris.  
 Minart, A., ingénieur électricien, rue Neuve, 7, Amiens.  
 Mines de Cobalt de l'Aragon, nickel, rue Caumartin, 28, Paris.  
 Minotte et Cie., globes et lanternes, boul. Sébastopol, 135, Paris.  
 Grand Fils., sonneries et signaux électriques, rue Galande, 57, Paris.  
 Misonier et Collas, sonneries et signaux électriques, rue Myrrha, 87, Paris.  
 Miton, cylindres en verre, rue Paradis Poissonnière, 10, Paris.  
 Moitre, E., nickeleur et nickelure, rue de Bondy, 96, Paris.  
 Mollet, tréfilerie de fils d'acier, etc., rue Albouy, 21, Paris.  
 Molteni, aimants, rue du Château d'Eau, 44, Paris.  
 Moncomble, E., nickeleur et nickelure, galerie Vivienne, 9, Paris.  
 Monduit et Becket, tubes et tuyaux, rue de Chazelles, 35, Paris.  
 Mongenot, E., et Cie., nickeleurs et nickelure, rue Sedaine, 17, Paris.  
 Mongin, Ed., outils pour électriciens, rue Sedaine, 8, Paris.  
 Monnier, ingénieur électricien, rue Pigalle, 57, Paris.  
 Monnier, globes et lanternes, rue de la Folie-Méricourt, 104, Paris.  
 Monniot, globes et lanternes, rue Martel, 8, Paris.  
 Monodet et Voissin, manganèse, rue des Ecoiffes, 25, Paris.  
 Montclar, J. M. A., fermetures électriques, boul. de Strasbourg, 2, Paris.  
 Montic, claviers en ivoire et celluloïd, télégraphie rue Oberkampf, 127, Paris.  
 Mora, C., machines magnéto électriques et dynamo électriques, boul. Richard-Lenoir, 207, Paris.  
 Morand, cylindres en verre, rue de Poitou, 41, Paris.  
 Morellet, les fils d'Aug., caoutchouc et gutta percha bruts, rue Sévigné, 27, Paris.  
 Morignat, aimants, rue de Charonne, 195, Paris.  
 Morin, Vve., platine, rue Montmartre, 77, Paris.  
 Morizot, L., tourneur en métaux, rue Orfila, 30, Paris.  
 Mora, L., matériel de lignes télégraphiques, rue St. Martin, 4, bis, usines à Grenelle, rue du Théâtre, 48.  
 Moseley, David, et Fils., courroies de transmission, cité Magenta, 3, boul. Magenta, 33, bis. Paris.  
 Moser, James, ingénieur électricien, rue Lord Byron, 16, Paris.  
 Motteau, fils de cuivre et laiton, rue de Rambuteau, 20, Paris.  
 Moncel, Cte. Th. du, ingénieur électricien, rue de Hambourg, 7, Paris.  
 Mouchel, J. O., câbles et fils isolés, rue des Communes, 10, Paris.  
 Murlon, Ch., et Cie., piles et batteries électriques, rue de Ruysbroeck, 61, Bruxelles, Belgique.  
 Moynet, A., et Cie., outils pour électriciens, rue des Hundriettes, 4, et 6, Paris.  
 Mager, A., caoutchouc et gutta percha bruts, rue d'Aboukir, 11, Paris.  
 Muller, Ph., et Roux, Ch., machines à vapeur, rue Amelot, 138, Paris.  
 Muller, F., téléphones et microphones, rue d'Arenberg, 42, Bruxelles.  
 Munier, J. H., mica Faubourg Saint Denis, Paris.  
 Musouri de Rogan, vases en grès, rue Vacon, 63, Clandevés, 135, et 7, et Lile St. Victor, Marseille.

## N.

Nacfer, J., télégraphie, Amiens.  
 Nacfer, Jules, télégraphie, rue Lamorlurè, 17, Paris.  
 Napoli, D., contrôleur de ronde de nuit, télégraphie, rue du faub. Poissonnière, 98, Paris.  
 Nègre, horlogerie électrique, cours d'Alsace Lorraine, Bordeaux.  
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Neut, L., et L. Dumont, courroies de transmission, rue Notre Dame, 42, Lille.  
 Neyret, E., sonneries et signaux électriques, rue de la Chaussée d'Antin, 64, Paris.  
 Niaudet, Alf., ingénieur électricien, rue de Seine, 6, Paris.  
 Nicolas père et Fils, paratonnerres, Cours de la Liberté, 3, Lyon.  
 Nickmilder et Cie., tubes et tuyaux, rue Mouton Duvernet, 12, Paris.  
 Niel, Louis, vases en grès, rue République, 1, Marseille.  
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 Noê, Ch. F., machines magnéto électriques and dynamo électriques, rue Laromicière, 9, Paris.  
 Noel, Vick, Alf., appareils servant aux mesures électriques, rue Saint Denis, 163, Paris.  
 Norat, C., caoutchouc et gutta percha bruts, rue de Maubeuge, 39, Paris.  
 Normand, Ch., mercure, rue de Châteaudun, 51, Paris.  
 Nugnes, Aimé, courroies de transmission, quai de la Charité, 12, Lyon.

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 Olsen, A., télégraphie, La Rochelle.  
 Oré et Chagnoleau, appareils électro médicaux, rue du Palais de Justice, 12, Bordeaux.  
 Ory, никелеur et nickelure, rue des Vertus, 20, Paris.  
 Osselin, E., électricité appliquée aux sciences, etc., rue du Maine, 3, Asnières, Seine.  
 Oulmann, caoutchouc et gutta percha bruts, rue de l'Entrepôt, 30, Paris.

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 Pain, téléphones et microphones, rue aux Champs, 6, Caen.  
 Papin, fils électriques, boul. Montparnasse, 51, Paris.  
 Parent, Geo., jouets électriques, rue Debelleyne, 19, Paris.  
 Paris, L., et Cie., isolateurs et fournitures de télégraphie et téléphone, Le Bourget, Seine, rue Pi  
 Poissonnière, 47, Paris.  
 Parod, fils électriques. Plessis Fréville, par Villiers-sur-Marne.  
 Passaquay, télégraphie, Mâcon.  
 Patry, H. A., horlogerie électrique, rue de Bouloi, 12, Paris.  
 Paul, Jamin et Cie., télégraphie, rue de Parme, 10, Paris.  
 Pavoux et Cie., isolateurs et fournitures de télégraphie et téléphone, rue Delaunoy, 14 & 16, Bru  
 Peillon, J., paratonnerres, rue de la Barre, 14, Lyon.  
 Pelletier, G., fils, timbres pour sonneries, rue Bailly, 5, Paris.  
 Pelletier, A. L., paratonnerres, rue de Rome, 78, Paris.  
 Perille, J., никелеur et nickelure, avenue de Clichy, 98, Paris.  
 Perin, Grados, fils électriques, boul. Richard Lenoir, 106, Paris.  
 Pernot et Semin, argentiers et doreurs, rue Réaumur, 7, Paris.  
 Perotte, modèles, rue Saint Maur, 73, Paris.  
 Petit, G., avertisseurs d'incendie, rue Blomet, 91, Paris.  
 Petit, J., caoutchouc, rue Saint Remi, 59, Bordeaux.  
 Petit, P., allumeurs et extincteurs électriques, place Cadet, 27, 29, et 31, Paris.  
 Petitjean et Belpêche, fils de fer, rue des Vinaigriers, 29, Paris.  
 Petitqueux et A. Thomas, sonneries et signaux électriques, rue Ravignan, 8, Paris.  
 Pia, G., piles électriques, boul. de Belleville, 44, Paris.  
 Picard, A., isolateurs et fournitures de télégraphie et téléphone, rue du Marais, 62, Paris.  
 Picart, instruments pour la physique et la Chimie, rue Mayet, 20, Paris.  
 Pichou, A., никелеur et nickelure, rue Notre Dame de Nazareth, 8, Paris.  
 Pieplu, paratonnerres, rue de Bréa, 20, Paris.  
 Pierrard, O., charbons électriques, rue Pelleport, 147, Paris.  
 Pierre, Ve., sonneries et signaux électriques, boul. Malesherbes, 79, Paris.  
 Pile, E., sonneries et signaux électriques, rue de la Perle, 24, Paris.  
 Pilleux et Quesnot, machines dynamo électriques et magnéto électriques, près Beauvais, Oise.  
 Pilliard, L. zinc, rue St. Saint Martin, 106, Paris.  
 Pilter, Th., machines à vapeur, rue Alibert, 24, Paris.  
 Piolat, B., zinc, rue Portefoin, 14, Paris.  
 Pirot, A., laminoirs, rue de Montmorency, 14, Paris.  
 Placide-Pettereau le jeune, frère et fils, courroies de transmission, à Château Grenault, Indre et  
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 Pollard, M., téléphones, Paris.  
 Portebois, A., sonneries et signaux électriques, Saint Quentin.  
 Postel-Vinay, A., téléphones et microphones, rue Vanneau, 38, Paris.



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 : fils, outils pour électriciens, boul. Voltaire, 13, Paris.  
 et Wittmann (Poulenc frères, succ.). nickeleurs et nickelure, rue St. Merri, 7, Paris.  
 Léne, nickeleur et nickelure, rue de la Roquette, 51, Paris.  
 fils électriques, boul. Richard-Lenoir, 82, Paris.  
 macher, J. L., électricité appliquée aux sciences, etc., rue St. Martin, 239, Paris.  
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 ad frères, moteurs électriques, rue Oudinot, 23, Paris.  
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 d, manganèse, rue Matignon, 34, Paris.  
 ot, télégraphie, rue Sedaine, 11, Paris.  
 , J., bronzes et appareils pour lumière électrique, rue de Turenne, 116, Paris.  
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 et Cie., électricité appliquée à l'industrie, &c., rue d'Aboukir, 4, Paris.  
 , ingénieur électricien, boul. Bischoffsheim, 26, Bruxelles.  
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 Chassan, poste Morse portatif, télégraphie, rue Bonaparte, 62, Paris.  
 , Joseph Chevalier, avertisseurs d'incendie, Ravenne.  
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 t Cie, horlogerie électrique, cour des Petites-Ecuries, 8, Paris.  
 , allumeurs et extincteurs électriques, rue Charlot, 28, Paris.  
 t, R., et Cie., manganèse, avenue de Paris, 20, Saint Denis. Paris.  
 , L., tréfileries de fils, d'acier, &c., boul. Voltaire, 36, Paris.  
 sch, A., tubes et tuyaux, quai Valmy, 19, Paris.  
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 t et Maquiny, argentiers et doreurs, rue du Faubourg, St. Denis, 87, Paris.  
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 J., nickel, rue du Parc Royal, 16, Paris.  
 t Barrière, télégraphie (appareils et fournitures de), rue Saint Sabin, Paris.  
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 A., sonneries et signaux électriques, rue Rochochouart, 35, Paris.  
 rt, paratonnerres, pass. de l'Industrie, 4, faub. Saint Martin, 41, Paris.  
 , sonneries et signaux électriques, avenue de la Gare, Nice.  
 F., appareils électriques, Cité Magenta, 3, Paris.  
 lt, Cornélius, ingénieur électricien, rue le Peletier, 23, Paris.  
 , fils de fer, rue Chaperon, 25, Paris.  
 , J. A. C., télégraphie, rue de Sauve, 21, Nîmes.  
 , J. C., tubes et tuyaux, rue Colbert, place Centrale, Marseille.  
 Leb et fils, soc. gén. de verreries, verreries et vases pour chimistes et électriciens, boul. de la  
 derie, 13, 15, 17, Marseille.  
 nstruments de précision, boul. Saint Germain, 130, et 132, Paris.  
 J., électricité appliquée à l'industrie, &c., rue Saint Martin, 225, Paris.  
 , J., Con et Cie., fils d'acier, rue de Lancry, 17, Paris.  
 rff, électricité appliquée à l'industrie, &c., rue Delambro, 20, Paris.

## S.

V., argentier et doreur, rue d'Enghien, 12, Paris.  
 A., amiante, rue Taylor, 22, Paris.  
 A., piles électriques, rue du Château d'Eau, 25, Paris.  
 F., électricité appliquée aux sciences, rue des Grands, Augustins, 23, Paris.  
 g, matériel de lignes télégraphiques, avenue de Neuilly, 31, Neuilly.

- Sanchez, F. Torres, plomb, rue Séguier, 3, Paris.  
 Sanison, F., piles électriques, av. Duquesne, 39, Paris.  
 Sarassin, E., caoutchouc et gutta percha bruts, rue du Château d'Eau, 27, Paris.  
 Sarcin, Jules, ingénieur électricien, rue de Torquville, 9, Paris.  
 Saurv, E., sonneries et signaux électriques, rue Saint Laurent 21, Paris.  
 Sautter, Lemonnier et Cie., machines magnéto et dynamo électriques, avenue de Saffron, 26, Paris.  
 Sauvageon, J., tonneries et signaux électriques, Tournon, Ardèche.  
 Savournin, tubes et tuyaux, rue de la République, 31, Marseille.  
 Sazéral, J. et E. Lout, sonneries et signaux électriques, Brest.  
 Schender et Cie., fils d'Acier fabricants, rue de Provence, 56, Paris.  
 Schudt, saminoirs, rue Popin-court, 39, Paris.  
 Schulart, Th., appareils servant aux mesures électriques, rue du Marais, 27, Gand, Belgique.  
 Schultz, J., sonneries et signaux électriques, rue Capdeville, 12, Bordeaux.  
 Scrivanous, Grég., ingénieurs électriciens, rue Vignon, 32, Paris.  
 Segay et fils, électricité appliquée aux sonneries, &c., rue Monsieur-le-Prince, 53, Paris.  
 Selignom, Lui, ingénieur électricien, rue Denfert Rochereau, 23, Paris.  
 Sengel, E., nickel, rue Beautreillis, 22, Paris.  
 Serainc, moteurs à gaz, rue Campagne Première, 8, bis, Paris.  
 Serrin, V., piles électriques, boul. St. Martin, 1, Paris.  
 Seward, M. A. et Cie., le nickel, soc. anonyme, nickel, rue Vergnaud, 49, Bordeaux.  
 Siemens frères, machines magnéto, électriques et dynamo électriques, moteurs électriques, ingénieurs électriciens, rue Picot, 8, Paris.  
 Sieur, Jules Xavier Eugène, tableaux indicateurs de sonneries, boul. Saint Marcel, 38, Paris.  
 Simmen, A., accumulateurs et piles électriques, rue Dombaste, 55, Paris.  
 Smith et Coventry, courroies de transmission, rue Alibert, 10, Paris.  
 Smith, W. et fils, fils d'acier, rue de Bondy, 66, Paris.  
 Société an. de fab. de produits chimiques pour les Sciences et l'Industrie, verreries et vase pour chimistes et électriciens, rue des Ecoles, 42 et 44, Paris.  
 Société an. de Grivénée, fils de fer, Grivénée, Belgique.  
 Société Anonyme de l'Avertisseur Electro Automatique, sonneries et signaux électriques, rue Scriba, 1, Paris.  
 Société Anonyme d'électricité (A. Gerard), phares passage Cottin, 8, Paris.  
 Société Anonyme de Nickel, fils en nickel, rue de la Chaussée d'Antin, Paris.  
 Société Anonyme des Acieries et Forges de Firminy, fils d'acier, boul. Voltaire, 36, Paris.  
 Société Anonyme des Ateliers de constr. mécanique et d'appareils électriques, lumière électrique, Voltaire, 207, Paris.  
 Société anonyme des câbles électriques, boul. Haussmann, 33, Paris.  
 Société Anonyme des forges de Châtillon et Commentry, fils d'acier, rue de Chartres, 4, Paris.  
 Société Anonyme des Forges et Acieries des St Hippolyte fils d'acier, faub. Poissonnière, 8, Paris.  
 Société Anonyme des Hauts Fourneaux, rue Terrage, 4, Paris.  
 Société Anonyme des Hauts Fourneaux, Forges, et Fonderies de Franche Comté, câbles et fils d'acier, avenue Daumesnil, 116 et 118, Paris.  
 Société Anonyme des Hauts Fourneaux et Fonderies du Val d'Osne, tubes et tuyaux, boul. Voltaire, 68, Paris.  
 Société Anonyme des Mines de Malfidano, zinc, rue Lafayette, 12, Paris.  
 Société Anonyme des Zines Française, zinc, rue du Quatre Septembre, 14, Paris.  
 Société Centrale de Constr. de Machines, machines à vapeur, route d'Aubervilliers, 50, Pantin.  
 Société de Constr. Mécaniques et d'appareils électriques, éclairage électrique, rue St. Florentin, 11, Paris.  
 Société de Constr. Mécan. d'Anzin, établis. le Quillaecq, machines à vapeur, Anzin Nord.  
 Société des convertisseurs Alcindor, argentiers et doreurs, rue Hauteville, 4, Paris.  
 Société des Ingénieurs Civils, cité Rougemont, 10, Paris.  
 Société des Ingénieurs Télégraphistes et des Electriciens d'Angleterre, rue de Naples, 4, Paris.  
 Société des Papeteries de Vidalon, papiers-bande pour télégraphie, Vidalon, Annonay, Ardèche.  
 Société Internationale des Electriciens, rue de Grenelle, 99, Paris.  
 Société de l'électrophone L. Maiche et Cie., appareils électriques rue Louis-le-Grand, 3, Paris.  
 Société du Familistère, représentée par A. Moret, nickel-rouge et nickelure, faub. St. Martin, 173, Paris.  
 Société Française d'électricité (F. Girard et Cie.), lampes électriques et régulateurs, boul. Haussmann, 14, Paris.  
 Société Française d'Inoxydation et de Platinage, platine, rue des Petits Champs 76, Paris.  
 Société Franco-Indienne d'Industrie et de construction, appareils électriques, cité Montyon, 6, Paris.  
 Société Générale des Téléphones (siège Social à Paris succursale téléphones sociétés de Bordeaux, Quenoues, Bordeaux).  
 Société Générale des Téléphones, téléphones, place de la Gare, 1 et 3, Lille.  
 Société Générale des Téléphones, soc. av. 25,000 fr., rue Chaudartin, 41, Paris.  
 Société Générale des Téléphones Siège Social rue des Petits Champs, Paris, 66, Succursale République, 14, Marseille.  
 Société Générale des Téléphones, société de, rue Neuve, 1, Lyon.  
 Société Gramme, moteurs électriques, rue Drouot, 15, Paris.  
 Société Ind. et Com. Edison, balances électriques, Ixry sur Seine.  
 Société Ind. et Com. Edison, éclairage électrique, avenue de l'Opéra, 33, Paris.  
 Société Ind. l'Électricité, électricité appliquée à l'industrie, &c., rue Taitbout, 20, Paris.  
 Société la Force et la Lumière, piles électriques, avenue de l'Opéra 5, Paris.  
 Société Lyonnaise de constructions mécaniques et de lumière électrique machines magnéto, câbles et dynamo électriques, rue de Grammont, 19, Paris.  
 Société des machines magnéto électriques, électricité appliquée à l'industrie, &c., rue Drouot 15, Paris.  
 Société Métallurgique de Gorce, fils de fer, rue des Frères-Bourgeois, 34, Paris.  
 Société Métallurgique de Périgord, fils de fer, rue Taitbout 80, Paris.  
 Société des Mines et Fonderies de Zinc de la Vieille Montagne, zinc, rue Richer, 19, Paris.

**Société Nouvelle de l'embrayage par l'électricité, électricité appliquée à l'industrie, rue de Provence, 60, Paris.**  
**Société Parisienne de fonderie et de laminage, câbles et fils isolés, rue du Chemin-Vert, 11, Paris.**  
**Société Universelle d'électricité Tommasi, accumulateurs d'électricité, boul. de Courcelles, 118, et rue de Provence, 11, Paris.**  
**Sohier et Cie., fils de fer, rue de Lafayette, 121, Paris.**  
**Solignac et Cie., éclairage électrique, ingénieurs électriciens, &c., rue Saint Maur, 208, Paris.**  
**Somzée, L., L., piles et batteries électriques, rue Royale, 217, Bruxelles.**  
**Sorgue, P., tréfileur, &c., Passage Corbeau, 9, Paris.**  
**Sorrel, Mary, sonneries et signaux électriques, place Ducale, 20, Charleville.**  
**Sveiedad Madriléna de electrici-dad, moteurs électriques, Madrid, Espagne.**  
**Stehelin et Rimè, feutres, rue de la Banque, 14, Paris.**  
**Stvesser, galvanoplastie, boul. St. Germain, 122, Paris.**  
**Strebet Dorleans, sonneries et signaux électriques, Faub. du Temple, 106, Paris.**  
**Strube, H., outils pour électriciens, rue Campagne Première, 19, Paris.**  
**Stutz et Cie., instruments pour la physique et la chimie, rue Esquermoise, 13, Lille.**  
**Suisse, F., lampes électriques et regulateurs, rue des Grands Augustins, 23, Paris.**  
**Susse Frères, bronzes, et appareils pour lumieres électriques, place de la Bourse, 31, Paris.**  
**Swan United Electric Light Co., Limited (Nelson K. Cherrill), Usine, rue des Sarrazins, 70, Lille.**  
**Syndicat Français de la Lampe Soleil, éclairage électrique, avenue de Wagram, 42, Paris.**

## T.

**Taillifesse, sonneries et signaux électriques, rue Lafayette, 172, Paris.**  
**Talrich, J., modèles, boul. Saint Germain, 97, Paris.**  
**Taverdon, Al., machines à vapeur, rue de l'Arbalète, 36, Paris.**  
**TAYLOR, GEO. CROSLAND, fils isolés, Dee Side Electric Works, Neston, Cheshire, England. Voir index des annonces Britanniques.**  
**Terral, P. appareil Hughes pour transmission, télégraphie, rue du Mesnil, 116 et 118, Paris.**  
**Tessier, Jules, ingénieurs électriciens, rue du Théâtre, 7, Paris.**  
**Teste, A., père, fils et Pichat, tréfilerie de fils d'acier, de fer, de laiton et de zinc, rue Claire, 15, Vaise, Lyon.**  
**Tester, William, téléphones paratonneres, rue de Vaugirard, Paris.**  
**Taxier, de la, Pommirage, pièce tournées pour appareils électriques, avenue Parmentier, 105, Paris.**  
**Thévenon fils, sonneries et signaux électriques, rue de Roanne, St. Etienne.**  
**Thoré, horlogerie électrique, rue Porte Saint Georges, 31, Anvers.**  
**Tilloy, A., zinc, rue des Capettes, 9, Amiens.**  
**Tisandier, G., moteurs électriques, avenue de l'Opéra, 12, Paris.**  
**Terilon, Verdier et Cie., caoutchouc manufaceure, rue d'Enghein, 25, Paris.**  
**Tournade, Hip., cylindres en zinc et diaphragmes pour piles; entrepreneur breveté, fabrique spéciale de cylindres en zinc et appareils de divers systèmes pour la télégraphie fournisseur des lignes télégraphiques du gouvernement et de l'étranger et des lignes de chemins de fer, Fondettes, près Tours, Indre et Loire.**  
**Trouvé, Gust., batteries électriques, appareils electro médicaux, bateaux électriques, aimants, rue Vivienne, 14, Paris.**

## V.

**Vallejos, H. Lieut.-Colonel, ingénieur électricien, rue du Faubourg St. Honoré, 1, Paris.**  
**Vallois fils, appareils électriques, rue d'Arcole, 13, St. Etienne.**  
**Vanderbiste, E., moteurs électriques, rue de la Montagne, 68, Bruxelles.**  
**Vandeveldt fils, argenteur et doreur, place du Grand Sablon, 12, Bruxelles.**  
**Van Hulle, ingénieur électricien, rue Chaussée d' Anvers, Bruxelles.**  
**Varral, Elwell et Middleton, machines à vapeur, avenue Trudaine, 1, Paris.**  
**Vasseur-Mercier, A., électricité appliquée aux sciences à l'industrie, à la médecine et aux arts, rue de Rumigny, 49, Amiens.**  
**Vaucelle et fils, poteaux télégraphiques en fer, rue saint Maur, 146, Paris.**  
**Vautrin, J. E., outils pour électriciens, rue du Fg. St. Martin, 236, Paris.**  
**Vauzelle et fils, isolateurs et fournitures de télégraphie et téléphone, rue St. Maur, 146, Paris.**  
**Vayet, sonneries et signaux électriques, rue Ferrandirè, 22, Lyon.**  
**Yenot, A. et P. St. Germain, caoutchouc et gutta percha bruts, rue de la Barbette, 2, Paris.**  
**Verdavaine, E., paratonnerres, rue Mandar, 10, Paris.**  
**Verreries et cristalleries de la Seine, globes et lanternes, rue St. Sabin, 42, Paris.**  
**Verschave, fils de fer, rue Pavée, Marais, 17, bis Paris.**  
**Verschave, E., tréfileries de fils, d'acier, &c., Quai de la Marne, 44, Paris.**  
**Verné-Spelmanns Ant. Briclot & Cie., courroies de transmission, rue de la Prévoyance, 34, Bruxelles.**  
**Vert, C. X., appareils électro-médicaux, passage Bouchardy, 20, Paris.**  
**Vian, électricité appliquée à l'industrie, &c., rue du Châteaudun, 53, Paris.**  
**Videcocq, fils électriques, Rugles, Euro.**  
**Vidie, J. et fils, piles électriques, Route de Flandres, 48, Pantin, Seine.**

Vignon-Choquit, tubes et tuyaux, rue Franklin, 8, Lyon.  
Villemot, minium, rue Amelot, 43 et 52, Paris.  
Villette, U., minium, rue de Cantelew, 8, boul. Montebello, Lille.  
Vinay, E. électricité appliquée à l'industrie, &c., rue Vanneau, 38, Paris.  
Vivez, caoutchouc, rue Douves, 41, Bordeaux.  
Voghels, C., appareils électrique (marchand d'), rue des Pierres, 87, Bruges.  
Voillereau, cabines sourdes pour transmissions téléphoniques, rue Chapon, 29 et 42, Paris.  
Voisin, A., électricité appliquée à l'industrie, &c., rue St. Fargeau, 41, Paris.

## W.

Wackanru, A. vases en grès, rue Grègnau, 2, Marseille.  
Waelput, C., paratonnerres, rue des Rémouleurs, 19, Gand., Belgique.  
Walcker, W., et Cie., sonneries et signaux électriques, rue Rochechouart, 42, Paris.  
Wandenberg, H., sonneries et signaux électriques, rue des Trois Bornes, 39, Paris.  
Wardavoir, Hoël, caoutchouc, rue Esquemoise, 61, Lille.  
Warnon, V. J., piles électriques, rue de la Folie Méricourt, 27, Paris.  
Weil, galvanoplastie, rue des Petites Écuries, 13, Paris.  
Weill, Mich, piles électriques, boul. Sébastopol, 131, Paris.  
Weiller, et Montefiore Levi, fils de cuivre et laiton, Angoulême, Paris.  
Wery, Al., téléphones et microphones, rue de l'Université, 158, Liège, Belgique.  
White, Child et Cie., caoutchouc, boul. de la Liberté, Lille.  
Willot, télégraphie, rue de Boulainvilliers, 57, Paris.  
Wolff, Charles, amiante boul. Richard Lenoir, 103, Paris.

## Z.

Zellweger et Ehrenberg, appareils électriques, Uster, Suisse.  
Zion et L. Chollet, sonneries et signaux électriques, villa d'Orléans, 27, Montrouge, Paris.



# SOCIÉTÉ INTERNATIONALE DES ÉLECTRICIENS.

## LISTE GENERALE DES MEMBRES DE LA SOCIÉTÉ.

(20 Novembre, 1883).

**N.B.**—MM. les Membres sont priés de vouloir bien adresser au Secrétariat les corrections à introduire dans la présente liste.

Le noms des Membres Donateurs sont précédés du signe \*.

|                                                 |                                                                                                                                                |
|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Abadie, A.</b> .. .. .                       | 48, rue du Quesnoy, à Valenciennes (Nord).                                                                                                     |
| <b>Abria, —</b> .. .. .                         | à Bordeaux (Gironde).                                                                                                                          |
| <b>Achard, Auguste</b> .. .. .                  | 189, rue Lafayette, à Paris.                                                                                                                   |
| <b>Ackere, G. Van</b> .. .. .                   | Constucteur-Electricien, 13, Rue Esquermoise, à Lille.                                                                                         |
| <b>Adam, John, M.A.</b> .. .. .                 | 65A, Leadenhall-st., Londres, E.C.                                                                                                             |
| <b>Adams, William Grylls</b> .. .. .            | Professor, F.R.S., Vice-Président, S.T.E., 43, Notting Hill Square, Londres, W.                                                                |
| <b>Adjarian, H.</b> .. .. .                     | Électricien, 33, rue Hamidié, à Constantinople (Turquie).                                                                                      |
| <b>Albuquerque, Francisco d'</b> .. .. .        | à Porto (Portugal).                                                                                                                            |
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| <b>Allaire, Edmond</b> .. .. .                  | 28, rue Stéphenson, à Paris.                                                                                                                   |
| <b>Alliot, Eugène</b> .. .. .                   | à Châteaurenault (Indre-et-Loire).                                                                                                             |
| <b>Alluard, —</b> .. .. .                       | Professeur de Physique à la Faculté des Sciences, Directeur-fondateur de l'Oise, servatoire météorologique du Puy-de-Dôme, à Clermont-Ferrand. |
| <b>Alvarez, Julio</b> .. .. .                   | Ingénieur Maritime à San Fernando, province de Cadix (Espagne).                                                                                |
| <b>Alvargonzalez, Victoriano</b> .. .. .        | à Dijon (Espagne).                                                                                                                             |
| <b>Ameye, Camille</b> .. .. .                   | à Iseghem (Belgique).                                                                                                                          |
| <b>Ami, Castor</b> .. .. .                      | Capitaine du Génie, 97, 3 rue Mayor, à Madrid (Espagne).                                                                                       |
| <b>Amonet —</b> .. .. .                         | Directeur de la Société Minéralogique, 13, rue du Helder, à Paris.                                                                             |
| <b>Amser, Lafon J.</b> .. .. .                  | à Schaffhouse (Suisse).                                                                                                                        |
| <b>Andouard, Ambroise</b> .. .. .               | Professeur à l'école de Médecine de Nantes.                                                                                                    |
| <b>Andrews, J. D. F.</b> .. .. .                | Woodside Electric Wat., Woodside Road, à Glasgow.                                                                                              |
| <b>Andrieu, E.</b> .. .. .                      | Commis principal des Télégraphes, 30, rue Lamouroux, à Agen (Lot-et-Garonne).                                                                  |
| <b>Anterrieu, Émile</b> .. .. .                 | Membre du Conseil Général de l'Hérault et Conseiller Municipal, 7, rue Boussairolles, à Montpellier (Hérault.)                                 |
| <b>Antony, J.</b> .. .. .                       | Électricien, 31, rue Rovigo, à Alger.                                                                                                          |
| <b>Aparicio, Don José</b> .. .. .               | Sous-Directeur des Télégraphes, 1, rue Fernando VI., à Madrid.                                                                                 |
| <b>Apostoli, Docteur</b> .. .. .                | 45, rue Richelieu, Paris.                                                                                                                      |
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| <b>Aradel, G. A.</b> .. .. .                    | 6, rue Blanc-Dutrouille à Bordeaux.                                                                                                            |
| <b>Arbate, A.</b> .. .. .                       | 33, Chemin de Tivoli, au Bouscat, près Bordeaux.                                                                                               |
| <b>Arcos, Antonio d'</b> .. .. .                | Colonel d'état-Major en retraite, 36, Macse, Rodrigo, Séville.                                                                                 |
| <b>Argyropoulo, Timoléon A.</b> .. .. .         | Professeur de Physique à l'école militaire d'Athènes, 69, rue d'Euripide, à Athènes.                                                           |
| <b>Arlincourt, Vicomte Ludovic d'</b> .. .. .   | Ingénieur-électricien, 6, Avenue de Montespan, à Paris.                                                                                        |
| <b>Armengand (aîné), Charles Eugène</b> .. .. . | 45, rue St. Sébastien, à Paris.                                                                                                                |
| <b>Armengand (jeune)</b> .. .. .                | Ingénieur Civil, Président de la Chambre Syndicale d'électricité, 23, Boulevard de Strasbourg, à Paris.                                        |
| <b>Arnand, J. L.</b> .. .. .                    | Commis des Télégraphes, 4, rue des Fabriques-de-Nadal, à Perpignan.                                                                            |
| <b>Arnoult, Charles</b> .. .. .                 | 37, rue d'Enghien, à Paris.                                                                                                                    |
| <b>Arnoult, Ernest</b> .. .. .                  | 37, rue d'Enghien, à Paris.                                                                                                                    |
| <b>Arnoye, Léon</b> .. .. .                     | Professeur de Physique à Montauban (Tarn-et-Garonne).                                                                                          |
| <b>Arsonval, d'</b> .. .. .                     | Directeur du Laboratoire de Physique Biologique au Collège de France, à Paris.                                                                 |
| <b>Artimini, Antonius</b> .. .. .               | Villa Artimini. à Firenze (Italie).                                                                                                            |
| <b>Asbrouck, Jules</b> .. .. .                  | Directeur du l'Usine à Gaz de Fontevrault (Maine-et-Loire).                                                                                    |
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# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTI

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| Augueux, Charles .. .. .              | 36, rue de la Folie-Regnault, à Paris.                                                                          |
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| Avenarues, M. .. .. .                 | Professeur à l'Université de Kieff (Russie).                                                                    |
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| Avril, Louis Charles René .. .. .     | 86, Avenue Villiers, à Paris.                                                                                   |
| Aylies, Louis Charles .. .. .         | 62, Avenue de l'Alma, à Paris.                                                                                  |
| Aylmer, John .. .. .                  | Ingénieur électricien, 4, rue de Naples, à Paris.                                                               |
| Babillot, Gabriel .. .. .             | Rue de la Paix, à St. Nazaire.                                                                                  |
| Bablon, V. .. .. .                    | 42, rue Boulard, à Paris.                                                                                       |
| Bach, Louis Jean Justin .. .. .       | Docteur en Médecine de la Faculté de Paris, à Conc<br>Ouche (Eure).                                             |
| Bæcker, Henri de .. .. .              | 61, rue de Rennes, à Paris.                                                                                     |
| Baille, — .. .. .                     | Répétiteur à l'école Polytechnique, 26, rue Ober<br>à Paris.                                                    |
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| Bandsept, Albert .. .. .              | 15, Chaussée de Wavre, à Bruxelles (Belgique).                                                                  |
| Baour, Emmanuel D. .. .. .            | 39, Cours du Pavé-des-Chartrons, à Bordeaux.                                                                    |
| Bapst, Jules .. .. .                  | Directeur du <i>Journal des Débats</i> , 20, rue des Ca<br>à Paris.                                             |
| Bar, Emile .. .. .                    | Inspecteur des Postes et Télégraphes, à Arras (Calais).                                                         |
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| Batail, Bernard .. .. .               | Fabricant d'appareils électriques, à Mondet, près T<br>(Lot-et-Garonne).                                        |
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| Baudement, Théophile .. .. .          | Commis des Télégraphes, 20, Place des Vosges, à P                                                               |
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| Baudot, Emile .. .. .                 | Ingénieur des Télégraphes, 181, rue de Vaugirard, i                                                             |
| Baudrais, J. ... .. .                 | 25, rue Royale, à Paris.                                                                                        |
| Baume-Pluvinel, Aymar de la .. .. .   | 20, rue de Courcelles, à Paris.                                                                                 |
| Bazerque, L. .. .. .                  | Horloger des Postes, 115, Cours d'Alsace-et-Lorr<br>Bordeaux.                                                   |
| Bazin, Auguste .. .. .                | 21, rue St. Pétersbourg, à Paris.                                                                               |
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| Béer, Emile .. .. .                   | Directeur Ingénieur des Télégraphes à Clermont-l<br>(Puy-de-Dôme).                                              |
| Béjar, Alexandre de .. .. .           | à Carthagène (Espagne).                                                                                         |
| Belfield, Réginald .. .. .            | Lyndally, Palace Road, à Londres, S.W.                                                                          |
| Bellanger, — .. .. .                  | Commis principal des Télégraphes, 37, Chemin d'A<br>à Bois-Colombes.                                            |
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| Belleville, J. .. .. .                | 16, Avenue Trudaine, à Paris.                                                                                   |
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| Bellot, Henri Arsène .. .. .          | 71, rue des Saints-Pères, à Paris.                                                                              |
| Bennerson, Vasset .. .. .             | Chez M. Vasset, apprêteur à Donchery (Ardennes).                                                                |
| Bennett, James Gordon .. .. .         | Directeur de la Société des câbles " Mackay-Bennett<br>avenue des Champs-élysées, à Paris.                      |
| Bernstegui, Fernum .. .. .            | Calle de St. Andres 33, 1 <sup>re</sup> , à Madrid.                                                             |
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| r, Jean Baptiste .. .. .                                                              | Ingénieur, rue du Général-Foy, 17, à Paris.                                                                                                                |
| er, J. .. .. .                                                                        | Fabricant de Téléphones et de Microphones, à Hanovre.                                                                                                      |
| , Jules Albert, C.E., A.S.T.E. .. .. .                                                | 16, New Bridge Street, Londres, E.C.                                                                                                                       |
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| rd, Julien .. .. .                                                                    | 8, rue de l'Echiquier, à Paris.                                                                                                                            |
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| hi, François .. .. .                                                                  | Quartier-maître mécanicien à l'école des Torpilles, à Boyardville (Ile d'Oléron).                                                                          |
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| ux, — .. .. .                                                                         | Lieutenant de Vaisseau à bord du <i>Redoutable</i> , Escadre de la Méditerranée.                                                                           |
| l, Pierre .. .. .                                                                     | à Saint-Genest, l'Erpt, près Saint-Etienne (Loire).                                                                                                        |
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| — .. .. .                                                                             | Directeur des Ateliers de la maison Bréguet, 18, rue Montmartre, à Paris.                                                                                  |
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| fls, L. .. .. .                                                                       | à Valence d'Agen.                                                                                                                                          |
| r, Enrique .. .. .                                                                    | à Cadix (Espagne).                                                                                                                                         |
| nps, Charles .. .. .                                                                  | Ingénieur des Télégraphes, 103, rue de Grenelle, à Paris.                                                                                                  |
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| Bourbouze, G. .. .. .                 | Professeur de physique, 340, rue St. Jacques, à Paris.                                                |
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| Bourdin, Charles Louis .. .. .        | 13, Avenue de la République, à Paris.                                                                 |
| Bourdon, Eugène (père) .. .. .        | 74, Faubourg du Temple, à Paris.                                                                      |
| Bourdon, Edmond .. .. .               | Rue de l'Ouest, à Colombes (Seine).                                                                   |
| Bourgery, — .. .. .                   | Notaire, à Nogent-le-Rotrou.                                                                          |
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| Braam, Jean André de .. .. .          | 3, rue des Mathurins, à Paris.                                                                        |
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| Bréguet, Louis .. .. .                | Membre de l'Institut, 39, Quai de l'Horloge, à Paris                                                  |
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| Bresson, L. .. .. .                   | Directeur de l'Usine à Gaz, à Valence (Drôme).                                                        |
| Brienvendu, Henri .. .. .             | Receveur des Télégraphes à la gare, à Lyon Perrach                                                    |
| Bright, Edward B. .. .. .             | 31, Golden Square, Londres, W.                                                                        |
| Bright, Sir Charles, M. Inst. C.E. .. | 31, Golden Square, Londres, W.                                                                        |
| Bright, John B. .. .. .               | 31, Golden Square, Londres, W.                                                                        |
| Brix, Dr. Ph. Wilhelm .. .. .         | Ingénieur des Télégraphes, R.P.A., à Charlotten<br>près Berlin.                                       |
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| Brugère, Henri .. .. .                | 3, rue de Lille, à Paris.                                                                             |
| Buchin, Auguste .. .. .               | Ingr. électricien, 11, rue Rolland, à Bordeaux.                                                       |
| Buffe, Armand .. .. .                 | Horloger électricien, 1, rue Arago, à Alger.                                                          |
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| Buguet, Abel .. .. .                  | Professeur de Physique, au Lycée de Moulins-sur-A                                                     |
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| Buxtorf, Emmanuel .. .. .             | Ingr. Constructeur, rue de Paris, à Troyes (Aube).                                                    |
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| Cahen, Albert .. .. .                 | Ingénieur, 1, Boulevard St. Denis, à Paris.                                                           |
| Cail, Casimir .. .. .                 | Ingénieur Electricien, Chef du Sec. Télégque. de l<br>Sewastopol-Ekaterinoslaw, à Sewastopol (Russie) |
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| Cardot, Abel .. .. .                  | Juge au Tribunal, à Bougie (Algérie).                                                                 |
| *Carpentier, J. .. .. .               | Ancien Ingénieur des Mres. de l'Etat, successe<br>Ruhmkorff, 34, rue du Luxembourg, à Paris.          |
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| so, Chevalier Robert .. .. .      | Direttore della Societa di Monteponi, 41, rue Cavour, à Turin, (Italie).                                                     |
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| , Joseph .. .. .                  | Opticien-Constructeur, 1, rue Montorge, à Grenoble (Isère).                                                                  |
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| , Jules .. .. .                   | à Maisons-Laffitte (Seine et Oise).                                                                                          |
| allan, Victor .. .. .             | 15, rue Dauphine, à Paris.                                                                                                   |
| re, Alan .. .. .                  | Général Post Office, à Londres, E.C.                                                                                         |
| roy, Hippolyte .. .. .            | Electricien, 89, Avenue Centrale, au Vésinet (Seine-et-Oise).                                                                |
| , Antoine .. .. .                 | Ingénieur de Manufactures de Tissus, 25, rue de Vauban, à Lyon.                                                              |
| n, Léopold .. .. .                | à Condom (Gers).                                                                                                             |
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| ie, Armand .. .. .                | Fondeur Constr. au Mans (Sarthe).                                                                                            |
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| ia, R. .. .. .                    | à Bonn (Prusse rhénane).                                                                                                     |
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| y, Georges .. .. .                | Dr. du Cabinet du Mtr. des P. et Télég, 99, rue de Grenelle, à Paris.                                                        |
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| e, J. M. .. .. .                  | Ingénieur, Chef du Service Technique des Télégraphes des Pays-Bas, à la Haye (Hollande).                                     |
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| Constantin, Jean .. .. .           | 8, rue Cornavent, à Villeurbanne (Rhône).                                     |
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| Cosmovici, Léon C. .. .. .         | Docteur ès Sciences, professeur de l'Université, à (Roumanie).                |
| Cotrel-Decaux, — .. .. .           | 1, rue des Bouchers, à Péronne (Somme).                                       |
| Coulon, Philippe .. .. .           | Ingénieur, 6, rue du Bel-Respiro, à Paris.                                    |
| Coulon, R. de .. .. .              | 110, Bould., St. Germain, à Paris.                                            |
| Coumbary, — .. .. .                | Dr. de l'Observatoire, Météorologique à Constantinople.                       |
| Couret-Pléville, — .. .. .         | 64, rue du Rempart, à Paris.                                                  |
| Courjon, Docteur A. .. .. .        | à Meyzieu, (Isère).                                                           |
| Courquin, Abbé Art .. .. .         | Professeur de Physique à Tourcoing (Nord).                                    |
| Courtet, Léopold Marie .. .. .     | à Louvigné-du-Désert (Ile et Vilaine).                                        |
| Courtois, Louis .. .. .            | Ingénieur de la Cie. R. Asturienne, à Aubry-les-Bains.                        |
| Courtois, de Langlade (de) .. .. . | Flers-en-Escrebieux (Nord).                                                   |
| Couteux, Léon .. .. .              | à Arles sur Rhône.                                                            |
| Couturier, Paul (Curé) .. .. .     | 6, rue des Archives, à Paris.                                                 |
| Crapon, Denis .. .. .              | à Malay, par Cormatin (Saône et Loire).                                       |
| Crépeaux, Constant .. .. .         | à Pont Evêque près Vienne (Isère).                                            |
| Crompton, R. E. ... .. .           | à l'Usine de Dol-de-Bretagne (Ile-et-Vilaine).                                |
| Cros, Méderic .. .. .              | 4, Mansion House Buildings, Londres, E.C.                                     |
| Crova, André .. .. .               | Professeur de Physique, à St. Gaudens (Haute Garonne).                        |
| Cruse, Adolphe .. .. .             | 14, rue du Carré-du-Roi, à Montpellier.                                       |
| Cunnington, J. S. .. .. .          | 124, Quai des Chartrons, à Bordeaux.                                          |
| Curchod, L. .. .. .                | 10, Carlinge Road, Cricklewood, Londres, N.W.                                 |
| Curie, Pierre .. .. .              | Dr. du Bureau International des Administrations graphiques, à Berne (Suisse). |
|                                    | 8, rue de Saint-Simon, à Paris.                                               |
| Dagrève, Elie .. .. .              | à Tournon (Ardèche).                                                          |
| Dalmas, Albert de .. .. .          | Au Château de Seyre (Haute Garonne).                                          |
| Dalmau, Thomas Y. .. .. .          | à Barcelonne (Espagne).                                                       |
| Damoiseau, Albert .. .. .          | 3, Bould. Arago, à Paris.                                                     |
| Daniell, Francis J. B. .. .. .     | Supt. Indo-Europ. Government Telegraphs, à Téhéran (Perse).                   |
| Danton, Jacques-Désiré .. .. .     | Ingénieur Civil des Mines, 11, Avenue de l'Observatoire, Paris.               |
| Danvers, Henri .. .. .             | Ingénieur de la maison Hutchinson, 19, rue de Valenciennes, Paris.            |
| Darq, E. .. .. .                   | Ingénieur des Télégraphes, 103, rue de Grenelle, à Paris.                     |
| Daries, Aristide .. .. .           | Electricien, 4, rue Bernadotte, à Pau (Basses Pyrénées).                      |
| Dario, Louis .. .. .               | Contrôleur des Télégraphes, à Tarbes (Hautes Pyrénées).                       |
| Daubrée, Augusto .. .. .           | Membre de l'Institut, Ecole Nationale des Mines, à Paris.                     |
| Dauphin, Eugène .. .. .            | Commis des Télégraphes, à Troyes (Aube).                                      |
| Debeauve, Paul .. .. .             | 42, rue Notre Dame des Champs, à Paris.                                       |
| Decauville, Aîné .. .. .           | Ingénieur, à Petit-Bourg (Seine-et-Oise).                                     |
| Dehonne, Georges .. .. .           | Ingénieur Civil, 38, Avenue de Malakoff, à Paris.                             |
| Delahodde, Victor .. .. .          | 19, rue Gauthier-de-Châtillon, à Lille.                                       |
| Delamotte, Georges .. .. .         | à Quessy, par Tergnier (Aisne).                                               |
| Delaporte, Georges .. .. .         | Ingénieur, à Tarare (Rhône).                                                  |
| Delaunay, — .. .. .                | 16, Bould. Châteaudun, à St. Dennis.                                          |
| Delefosse, Eugène Edmond .. .. .   | Docteur, 22, rue N. D. de Lorette, à Paris.                                   |
| Delineau, — .. .. .                | Le Docteur, 20, Bould. Richard-Lenoir, à Paris.                               |
| Delocre, — .. .. .                 | Ingénieur en Chef des Ponts et Chaussées, 38, rue Fraikin, à Lyon.            |
| Delpéch, — .. .. .                 | 10, rue Logelbach, Paris.                                                     |
| Delpéch, Junior .. .. .            | 190, Boulevard Haussmann, à Paris.                                            |
| Demarchi, Lamberts .. .. .         | Ingénieur, 65, Via Napoli, à Rome.                                            |
| Demoy, Jean Ludovic .. .. .        | Receveur des Postes et Télégraphes, 83, Boulevard de la Chapelle, à Paris.    |
| Deneufville, J. .. .. .            | Bois du Nord, au Havre (Seine Inférieure).                                    |
| Dennis, Félix .. .. .              | No. 221, au Havre.                                                            |
| Depeau, Paul .. .. .               | Lieutenant de Vaisseau, à bord du "Trident" (Ecole d'Evolution).              |
| Deschamps, Ripert, .. .. .         | Négociant à Beyrouth (Syrie).                                                 |
| Deschevow, Michel de .. .. .       | 132, Fontanka, à St. Pétersbourg.                                             |
| Deschiena, Joseph Eugène .. .. .   | 123, Boulevard St. Michel, à Paris.                                           |
| Desnos, Edouard .. .. .            | 26, Avenue Boesquet, à Paris.                                                 |

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| intes, François .. .. .    | Submarin Telegraph Company, 16, St. George's Square, Regent's Park, Londres, N.W.                      |
| ziers, E. .. .. .          | Ingénieur Civil des Mines, 2, Impasse Mazagran, à Paris.                                               |
| elles, Lucien .. .. .      | Ingénieur Civil, 8 bis, Avenue Percier, à Paris.                                                       |
| yat, — .. .. .             | Ingénieur des Télégraphes, 3, rue des Arsins, à Rouen.                                                 |
| ch, Emile .. .. .          | 21, rue Téhéran, à Paris.                                                                              |
| ix, Ernest .. .. .         | Commis des Télégraphes, 22, rue des Carmes, à Cambrai.                                                 |
| David.. .. .               | 27, rue de Rome, à Paris.                                                                              |
| onné, Camille .. .. .      | Constructeur électricien, 27, Grande rue, à Lunéville.                                                 |
| onné, Emile .. .. .        | Ingénieur Civil des Mines, 68, rue Veydt, à Bruxelles.                                                 |
| y, Th... .. .              | Constructeur électricien, 4 et 6, rue des Poitevins, à Paris.                                          |
| t, Comte .. .. .           | 6, Boulevard d'Argenson, à Paris.                                                                      |
| Urbain .. .. .             | Directeur des ateliers de M. Dumonlin-Froment, 49, rue St. Placide, à Paris.                           |
| s-Perdonnet, Alf. .. .. .  | Ste. Gal. de la Maison Bregnet, 4, rue Volney, à Paris.                                                |
| no, Lucien .. .. .         | 3, rue Louis-le-Grand, à Paris.                                                                        |
| ier, F. .. .. .            | 70, Boulevard du Montparnasse, à Paris.                                                                |
| t, Edmond .. .. .          | à Châlons-sur-Marne.                                                                                   |
| et, Comte de .. .. .       | Sénateur, 63, Avenue Marceau, à Paris.                                                                 |
| er, Docteur E. .. .. .     | Professeur Agrégé à la Faculté de Médecine, à Lille (Nord).                                            |
| , Lazare Ange .. .. .      | Contrôleur des Télégraphes à Ajaccio (Corse).                                                          |
| r, Salvador .. .. .        | Calle del Bruch, 85, 3°. Barcelona.                                                                    |
| r-Dufer, — .. .. .         | Dr. en Médecine, 52, rue Richer, à Paris.                                                              |
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| is, Edmond .. .. .         | Professeur de Physique, 29, rue Cozette, à Amiens.                                                     |
| urg, Georges .. .. .       | 45, Cours-des-Fossés, à Bordeaux.                                                                      |
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| amps, E. .. .. .           | Wilcome-Villa, 14, Croxted-lane, West Dulwich, Londres.                                                |
| isso, Th. .. .. .          | 82, rue Vanneau, à Paris.                                                                              |
| tet, E. .. .. .            | Ingénieur électricien, constructeur d'instruments de précision, 75, rue Claude-Bernard, à Paris.       |
| ier, Raymond .. .. .       | 75, rue de Courcelles, à Paris.                                                                        |
| sne, Louis .. .. .         | 67, rue du Rocher, à Paris.                                                                            |
| din, P. J. R. .. .. .      | Héliographe, 27, rue Vavin, à Paris.                                                                   |
| nt, G. .. .. .             | 92, rue Lafayette, à Paris.                                                                            |
| ulin-Froment, E. .. .. .   | Constructeur électricien, 85, rue N. D. des Champs, à Paris.                                           |
| a, Lucien .. .. .          | 5, rue Transversale, à Paris.                                                                          |
| n, Louis .. .. .           | Contrôleur des Télégraphes, à Mâcon (Saône et Loire).                                                  |
| y, F. .. .. .              | Ancien élève de l'Ecole Polytechnique, 6, Avenue de la Motte Biquet, à Paris.                          |
| it, Petit .. .. .          | à Cambrai (Nord).                                                                                      |
| , A. .. .. .               | Sous Chef du Laboratoire Municipal, 25, rue d'Ulm, à Paris.                                            |
| , G. .. .. .               | Electricien, 6, rue de Charlebourg, à La Garenne-Colombes, (Seine).                                    |
| y, Felix .. .. .           | Ingénieur, à St. Pierre-lès-Calais.                                                                    |
| r, Clovis .. .. .          | Ingénieur électricien, 17, rue Condorcet, à Lisieux (Calvados).                                        |
| noy, Louis Gustave .. .. . | 4, rue du Châteaux, à St. Omer (Pas-de-Calais).                                                        |
| u, Henri .. .. .           | Président de la Sté. Gle. du Crédit Industriel et Commercial, 66, rue de la Chaussée d'Antin, à Paris. |
| ut, François .. .. .       | 10, rue Mayran, à Paris.                                                                               |
| i, Joseph .. .. .          | Industriel, à Igon (Basses Pyrénées).                                                                  |
| , G. .. .. .               | Professeur, 22, rue Duban à Paris-Passy.                                                               |
| gton, Alfred .. .. .       | Représentant de la Cie. " Eastern Telegraph " à Otrante (Italie).                                      |
| — .. .. .                  | Commis principal des Télégraphes, à Valenciennes (Nord).                                               |
| ial, Adolphe de .. .. .    | 42, rue des Mathurins, à Paris.                                                                        |
| er, Charles .. .. .        | Conseiller intime au Dept. des Postes et Télégraphes, 94, Grossbeerenstrasse, à Berlin.                |
| , Thomas .. .. .           | 26, Avenue Trudaine, à Paris.                                                                          |
| r, Louis .. .. .           | 62, rue de Saintonge, à Paris.                                                                         |
| ns, Stephen Henri .. .. .  | D.C.L., M.S.Ch.I., 8, Argyll Street, Regent's Street, Londres.                                         |
| tt, Walter .. .. .         | Northern Telegraph Works, Halifax (Angleterre).                                                        |
| ora, Dr. G. B. .. .. .     | à Padoue (Italie).                                                                                     |
| , Frédéric .. .. .         | 133, bis, rue de Rome, à Paris.                                                                        |
| aecher, — .. .. .          | Chef de Bureau au Mtère. des P. et Télégraphes, rue de Grenelle, à Paris.                              |
| pes, Comte d' .. .. .      | à Charny (Yonne).                                                                                      |
| e, Léonce .. .. .          | Commis principal des Télégraphes, 45, Avenue Duquesne, à Paris.                                        |
| t, — .. .. .               | Inventeur-Constructeur, à Vienne (Isère).                                                              |
| J. J. .. .. .              | à Téhéran (Perse).                                                                                     |

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| Falero, Luis .. .. .                    | 15, Impasse Hélène, à Paris.                                                                                               |
| Faliés, Jacques Alfred .. .. .          | Ingénieur, Ancien Ingénieur de la Cie. de l'Ouest<br>cessionnaire des Chemins de fer d'Intérêt Local<br>Sarthe.            |
| Fasso, J. E. .. .. .                    | 12, rue de l'Hôtel-de-Ville, à Lyon.                                                                                       |
| Fauconnier, — .. .. .                   | Ingénieur, 2, rue Verte, à Orléans.                                                                                        |
| Faugier, Prosper .. .. .                | 18, Cours de l'Esplanade, à Privas (Ardèche).                                                                              |
| Faure, Camille .. .. .                  | à Saint-Brice (Seine-et-Oise).                                                                                             |
| Faure, Edouard .. .. .                  | Directeur des Postes et Télégraphes, à Gap (Htes. A.                                                                       |
| Faure, Pierre .. .. .                   | Place du Champ de Foire, à Limoges.                                                                                        |
| Faure-Miller, Roland .. .. .            | 28, rue de Matignon, à Paris.                                                                                              |
| Faure de St. Martial, du .. .. .        | Secrétaire du Bureau Intal. des Admin. télégraphi<br>Berne (Suisse).                                                       |
| Fayard, Prosper .. .. .                 | Juge suppléant 4, place Mi-Carême, à St. Etienne (l                                                                        |
| Faye, — .. .. .                         | Membre de l'Institut, 9, Chaussée de la Muette, Passy-                                                                     |
| Fielding, The Hon. Major Génl. W. H. A. | Au camp d'Aldershot (Angleterre).                                                                                          |
| Félix, C. .. .. .                       | Ingénieur électricien, 28, rue St. Lazare, à Paris.                                                                        |
| Felton et Guillaume .. .. .             | à Mulheim sur Rhin.                                                                                                        |
| Ferret, Eugène .. .. .                  | 56, rue Olivier-de-Serres, à Paris.                                                                                        |
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| Fesser, François .. .. .                | 32, Cambridge Gardens, Notting Hill, Londres, W.                                                                           |
| Feuquières, Jules .. .. .               | 89, rue de Sévres, à Paris.                                                                                                |
| Fichet, A. .. .. .                      | Ingénieur, Expert du Jury d'Electricité en 1878, 1<br>de Berlin, à Paris.                                                  |
| Fichet, A. M. .. .. .                   | Commis des Télégraphes, à Rennes (Ille et Vilaine).                                                                        |
| Fichot, Jean Louis .. .. .              | à Neuilly (Plaisance).                                                                                                     |
| Figuier, Louis .. .. .                  | Publiciste Scientifique, 7, rue Newton, à Paris.                                                                           |
| Finck, E. .. .. .                       | 57, rue de Babylone, à Paris.                                                                                              |
| Fischer, Emile de .. .. .               | Capitaine et Chef de Compagnie, 41, Norreg<br>Copenhague.                                                                  |
| Fitzgerald, Georges Francis .. .. .     | 40, Trinity College, Dublin.                                                                                               |
| Flogny, Ervin .. .. .                   | 81, rue Lemercier, à Paris.                                                                                                |
| Fortin-Hermann, A. .. .. .              | 138, Bould. du Montparnasse, à Paris.                                                                                      |
| Fould, Henri .. .. .                    | 75, Avenue des Champs-élysées, à Paris.                                                                                    |
| Fould, Léon .. .. .                     | 30, rue de Faubourg-Poissonnière, à Paris.                                                                                 |
| Fouquemberg, Nestor .. .. .             | Ingénieur des Mines à Vasmès, près Mons (Belgique).                                                                        |
| Fournier, Felix P. .. .. .              | Membre de la Commission des Missions Scientifiq<br>Ministère de l'Instruction publique, 119, rue de l<br>versité, à Paris. |
| Foustanos, Dr. Jean .. .. .             | Publiciste Scientifique de Grèce, 75, rue Monge, à Pa                                                                      |
| Foxcroft, William Mortimer .. .. .      | 3, Holfort Street, Londres, W.C.                                                                                           |
| Frayssinier, J. .. .. .                 | M. S. T. E., 97, Bould. de Sébastopol, à Paris.                                                                            |
| Fréchou, Alexis .. .. .                 | 3, Grande Allée, à Toulouse.                                                                                               |
| Fréchou, Emile .. .. .                  | à Nérac (Lot-et-Garonne).                                                                                                  |
| French, John .. .. .                    | Indian Government Telegraphs, à Calicut, Malabar<br>Orientales).                                                           |
| Freycinet, Ch. de .. .. .               | Membre de l'Institut, Sénateur, 77, rue de la Faimu<br>à Paris.                                                            |
| Fribourg, — .. .. .                     | Directeur du personnel au Ministère des Postes et<br>graphes, à Paris.                                                     |
| Friedel .. .. .                         | Membre de l'Institut, à Paris.                                                                                             |
| Frings, M. .. .. .                      | 106, rue St. Denis, à Paris.                                                                                               |
| Frison (fils), Emile .. .. .            | à Brethenay (Haute Marne).                                                                                                 |
| Frölich, Dr. O. .. .. .                 | 94, Markgrafenstrasse, à Berlin.                                                                                           |
| Frouin, André .. .. .                   | Commis des Télégraphes, 11, rue Princesse, à Paris.                                                                        |
| Gaiffe, A. .. .. .                      | Ingénieur électricien 40, rue St. André-des-Arts, à P                                                                      |
| Gaiffe (fils), Georges .. .. .          | 40, rue St. André-des-Arts, à Paris.                                                                                       |
| Guignon, Albert .. .. .                 | à Condé-sur-Noireau (Calvados).                                                                                            |
| Galante y Villaranda, José .. .. .      | à Séville (Espagne).                                                                                                       |
| Galereau, Léon .. .. .                  | à Laval (Mayenne).                                                                                                         |
| Gallardo y Romero, Mariano .. .. .      | Commandant de l'Ecole Centrale de Tir, à Tolède (Esp                                                                       |
| Gallet, Auguste .. .. .                 | Sous Directeur des Ecoles Municipales, 1, rue du M<br>à Belfort.                                                           |
| Gallice, Georges .. .. .                | Ancien élève de l'Ecole Polytechnique, 19, rue St. L<br>Châlons sur Marne.                                                 |
| Gally, Georges .. .. .                  | Electricien, 5, rue des Apennins, à Paris.                                                                                 |
| Gamarre, Abbé .. .. .                   | Fondateur de l'Orphelinat de Rollevillo par Montiv<br>(Seine-Inférieure).                                                  |
| Gariel, C. M. .. .. .                   | Secrétaire de l'Asson. française pour l'Avancem<br>Sciences, 39, rue Jouffroy, à Paris.                                    |
| Garnier .. .. .                         | Inspecteur ppal. des Télégraphes, 103, rue de Gren<br>Paris.                                                               |
| Garnier, Ch. .. .. .                    | Membre de l'Institut, Architecte de l'Opéra, 90, Bou<br>St. Germain, à Paris.                                              |
| Garnier, Paul .. .. .                   | 16, rue Taitbout, à Paris.                                                                                                 |



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| ouse, T. E...         | .. | .. | .. | .. | .. | 22, Paternoster Row, Londres, E.C.                                                                          |
| rd, Lucien ..         | .. | .. | .. | .. | .. | 18, Warwick Street, Regent Street, Londres.                                                                 |
| er, Jules ..          | .. | .. | .. | .. | .. | Ingénieur des Télégraphes, à La Rochelle (Charente Inférieure).                                             |
| rd, Pierre ..         | .. | .. | .. | .. | .. | Électricien, aux Usines du Creuzot.                                                                         |
| ier, Laurent ..       | .. | .. | .. | .. | .. | 21, rue Longue, à Lyon.                                                                                     |
| ier-Villars, J. A.    | .. | .. | .. | .. | .. | Libraire éditeur, 55, Quai des Grands Augustins, à Paris.                                                   |
| er, Edouard...        | .. | .. | .. | .. | .. | 48, rue de l'Université, à Paris.                                                                           |
| er, L. ..             | .. | .. | .. | .. | .. | Manufacturier, ancien Capitaine du génie, à Monthureux-sur-Saône (Vosges).                                  |
| er ..                 | .. | .. | .. | .. | .. | Horloger, à Montfort-l'Amaury (Seine-et-Oise).                                                              |
| ret, Dr. ..           | .. | .. | .. | .. | .. | Professeur de physique, à l'école de Médecine, 73, rue de Grenelle, à Paris.                                |
| , John...             | .. | .. | .. | .. | .. | District superintending Engineer P.T., à Cardiff (England).                                                 |
| iberger, Edmond       | .. | .. | .. | .. | .. | 24, rue Le Regrattier, à Paris.                                                                             |
| te, Eugène ..         | .. | .. | .. | .. | .. | 42, rue du Chemin Vert, à Paris.                                                                            |
| in, Léon F...         | .. | .. | .. | .. | .. | 27, rue de la Paroisse, à Versailles.                                                                       |
| oy, Eugène...         | .. | .. | .. | .. | .. | Industriel, 15, rue Thérèse, à Paris.                                                                       |
| l, Antoine Joseph     | .. | .. | .. | .. | .. | Horloger, 5, place St. Lambert, à Liège (Belgique).                                                         |
| l-Lescuyer, J. M.     | .. | .. | .. | .. | .. | Ingénieur de la Société Anonyme d'Electricité, 8, Passage Cottin (rue Ramey), à Paris.                      |
| uin Adrien ..         | .. | .. | .. | .. | .. | Ingénieur hydrographe de la Marine, 13, rue de l'Université, à Paris.                                       |
| , John Dixon          | .. | .. | .. | .. | .. | 18, Warwick Street, Regent Street, Londres.                                                                 |
| dan, E... ..          | .. | .. | .. | .. | .. | Boulevard de la Gare, à Narbonne (Aude).                                                                    |
| ux, A. G. ..          | .. | .. | .. | .. | .. | (Fabricant de Mastic de Minium), No. 124, rue d'Allemagne, à Paris.                                         |
| l, Fréjus ..          | .. | .. | .. | .. | .. | Électricien, 44, Boulevard Henri IV., à Paris.                                                              |
| l, Charles ..         | .. | .. | .. | .. | .. | Directeur du Laboratoire Municipal, 2, rue Monge, à Paris.                                                  |
| l, F. ..              | .. | .. | .. | .. | .. | Constructeur Electricien, 19, rue de Paris, à Clichy (Seine).                                               |
| let, G... ..          | .. | .. | .. | .. | .. | 33, bis, Avenue de Gennevilliers, à Colombes (Seine).                                                       |
| Emile ..              | .. | .. | .. | .. | .. | Professeur, 4, rue de la Gaîté, à Paris.                                                                    |
| ne, Francis H. ..     | .. | .. | .. | .. | .. | Télégraph et Signal Service, à Ottava (Canada).                                                             |
| one, John Hall ..     | .. | .. | .. | .. | .. | 17, Pembroke Square, à Londres.                                                                             |
| vski, A. ..           | .. | .. | .. | .. | .. | Membre de la Société de Physique, 59, rue de la Butte-Chaumont, à Paris.                                    |
| ner, Antonia ..       | .. | .. | .. | .. | .. | 70, bis, Avenue d'Avroy, à Liège (Belgique).                                                                |
| r, Walter T. ..       | .. | .. | .. | .. | .. | Electric Wire & Cable manufacturing, 25, Booth Street, à Manchester.                                        |
| n, P. ..              | .. | .. | .. | .. | .. | Ingénieur en Chef de la Marine, 18, rue du Vieux-Colombier, à Paris.                                        |
| als, Ernest ..        | .. | .. | .. | .. | .. | Administrateur délégué de la Cie. internationale d'éclairage électrique, 235, avenue du Commerce, à Anvers. |
| id, Léonce ..         | .. | .. | .. | .. | .. | Avoué à la Cour d'Appel, 128, rue de Rivoli, à Paris.                                                       |
| chmidt, Docteur...    | .. | .. | .. | .. | .. | 20, Johannistrasse, à Berlin.                                                                               |
| chmidt, Léopold...    | .. | .. | .. | .. | .. | 10, rue Murillo, à Paris.                                                                                   |
| vin, Ch. R. ..        | .. | .. | .. | .. | .. | Ingénieur, 11, rue Scribe, Paris.                                                                           |
| dorf, S. N... ..      | .. | .. | .. | .. | .. | Ingénieur Constructeur d'instruments de précision, 39, rue de Clichy, à Paris.                              |
| n, Francis M. ..      | .. | .. | .. | .. | .. | 62, Chippenham Road, London.                                                                                |
| , Théobald ..         | .. | .. | .. | .. | .. | Commis principal des Postes et Télégraphes, à Grenoble (Isère).                                             |
| s, James ..           | .. | .. | .. | .. | .. | à Valentia (Ireland).                                                                                       |
| er, Alphonse ..       | .. | .. | .. | .. | .. | Ingénieur Civil, Electricien, 25, rue Leszno, à Varsovie.                                                   |
| er, Ch... ..          | .. | .. | .. | .. | .. | Directeur technique des Télégraphes Egyptiens, Ingénieur électricien, au Caire (Egypte).                    |
| C. H. ... ..          | .. | .. | .. | .. | .. | Ingénieur électricien, de "India Rubber" à Persan-Beaumont (Seine et Oise).                                 |
| Robert Haye ..        | .. | .. | .. | .. | .. | Ingénieur en Chef de l'India Rubber and Télégraph Works Co., Silvertown, Londres.                           |
| W. E... ..            | .. | .. | .. | .. | .. | Électricien de la India Rubber Co., Silvertown, Londres.                                                    |
| er, Ulysse ..         | .. | .. | .. | .. | .. | 14, rue Vivienne, à Paris.                                                                                  |
| é, U. ..              | .. | .. | .. | .. | .. | 20, rue Charles de Muyssart, à Lille.                                                                       |
| ard, Henri ..         | .. | .. | .. | .. | .. | 4, rue Blanc-Dutrouilly, à Bordeaux.                                                                        |
| r, Docteur ..         | .. | .. | .. | .. | .. | 66, rue St. Lazare, à Paris.                                                                                |
| iero-Gulinelli, Comte | .. | .. | .. | .. | .. | à Ferrare (Italie).                                                                                         |
| on, B., ..            | .. | .. | .. | .. | .. | Commis de direction des Postes et Télégraphes de la Corrèze, à Tulle.                                       |
| n, Émile ..           | .. | .. | .. | .. | .. | Constructeur Électricien, 5, rue Montmorency, à Paris.                                                      |
| nard, Edmond ..       | .. | .. | .. | .. | .. | Ingénieur Electricien, 87, rue Clovis, à Reims (Marne).                                                     |
| min, G. ..            | .. | .. | .. | .. | .. | 152, Quai de Jemmapes, à Paris.                                                                             |
| art, Edouard ..       | .. | .. | .. | .. | .. | Commis principal des Télégraphes à Oran (Algérie).                                                          |
| ot ..                 | .. | .. | .. | .. | .. | Ingénieur Mécanicien à Ajaccio.                                                                             |
| folaud, L. ..         | .. | .. | .. | .. | .. | à Angoulême.                                                                                                |
| on, Adrien ..         | .. | .. | .. | .. | .. | 22, rue de la Bourse, à St. Étienne (Loire).                                                                |
| on, Emile ..          | .. | .. | .. | .. | .. | Ingénieur des Arts et Manufactures, 11, rue Taitbout, Paris.                                                |

# J. A. BERLY'S UNIVERSAL ELECTRICAL DIRECTORY AND ADVERTI

|                                         |                                                                                                                    |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Gümpel, Charles Godfrey .. .. .         | Engineur et Électricien, 190, Westminster Bridge<br>Londres, S.E.                                                  |
| Gutperle, A... .. .                     | Ingénieur, 4, rue de Marseille, à Paris.                                                                           |
| Hallez, Charles .. .. .                 | Lieutenant de Vaisseau, 5, cité d'Antin, à Brest.                                                                  |
| Hallez-d'Arros, Comte Olivier.. .. .    | Fondateur du Journal "l'électricité," 1, rue St. 1<br>Paris.                                                       |
| Hallopeau, Alfred .. .. .               | Ingénieur Civil, Répétiteur a l'École Centrale, 24,<br>Lyon, à Paris.                                              |
| Halphen, Edmond .. .. .                 | Ingénieur, 11, rue de Tilsitt, à Paris.                                                                            |
| Hamard .. .. .                          | à Dozulé (Calvados).                                                                                               |
| Hamelin .. .. .                         | Docteur Professeur à la Faculté de Médecine, à<br>pellier (Hérault).                                               |
| Hamilton, Georges A.. .. .              | Western Union Telegraph Co., 197, Broadway, N.Y                                                                    |
| Hamilton-Church, Al. .. .. .            | Uxbridge et District Electric Light Agency, 30, B<br>Road, Londres, N.                                             |
| Hancock, John William .. .. .           | Telegraph Co. de Ireland, Commercial Buildings, Da<br>Dublin.                                                      |
| Hanning, James .. .. .                  | Ingénieur, 20, Avenue de l'Opéra, à Paris.                                                                         |
| Hardret, A. .. .. .                     | à Senlis (Oise).                                                                                                   |
| Harlucea, Casto Martinier .. .. .       | Professeur au Collège de Paredes de Nava (Provi<br>Valencia), Espagne.                                             |
| Hauman-Devos, D. .. .. .                | 61, rue du Nord, à Bruxelles.                                                                                      |
| Hazarian, Jacques .. .. .               | Secrétaire de l'Assemblée Générale des Sociétés,<br>Arméniennes, à Constantinople.                                 |
| Heap, Charles R... .. .                 | Archway House, Bush Lane, Londres, E.C.                                                                            |
| Hebbert, E. G., M.A. .. .. .            | 18, Calverley Park, Tunbridge Wells (Angleterre).                                                                  |
| Hébert, Gustave Théodore.. .. .         | Pharmacien, à Isigny (Calvados).                                                                                   |
| Hébert, Ernest .. .. .                  | Inspecteur des Postes et Télégraphes, à Rouen.                                                                     |
| Hedemann, F. de .. .. .                 | 5, rue Daubigny, à Paris.                                                                                          |
| Héliand, Comte d' .. .. .               | Secrétaire Général de l'Exposition Internationale<br>tricité de Paris, en 1881, 21, Boulevard de la Ma<br>à Paris. |
| Helmholtz, Dr. Von, .. .. .             | Professeur, 16, Neue Wilhelmstrasse, Berlin.                                                                       |
| Henry, Paul.. .. .                      | Ingénieur des Téléphones, 21, rue Gay Lussac, à Pa                                                                 |
| Henry, René.. .. .                      | Ingénieur des Téléphones, 21, rue Gay Lussac, à Pa                                                                 |
| Hérizka, Adolphe .. .. .                | 33, Avenue des Champs Elysées, à Paris.                                                                            |
| Hermite, Eugène .. .. .                 | 33, rue Rennequin, à Paris.                                                                                        |
| Herrchillet .. .. .                     | Ancien Officier de Marine, 28, rue de l'Esplanade. à                                                               |
| Hinstins, Joseph .. .. .                | Ingénieur électricien, 4, rue St. Florentin, à Paris.                                                              |
| Hirsch, Joseph .. .. .                  | 1, rue de Castiglione, à Paris.                                                                                    |
| Hittorf, Professeur W. .. .. .          | à Münster (Westphalie)                                                                                             |
| Hoël, Jourdain .. .. .                  | Négociant, 26, Boulevard Voltaire, à Paris.                                                                        |
| Homans, Harry S. .. .. .                | 19, Avenue de l'Opéra, à Paris.                                                                                    |
| Hospitalier, Edouard .. .. .            | Rédacteur en Chef du Journal <i>l'Electricien</i> , 6, 1<br>Bellay, à Paris.                                       |
| Houzeau, Louis .. .. .                  | Contrôleur des Télégraphes, 11, rue Rousselet, à Pa                                                                |
| Howard, Frank G. .. .. .                | Oa Klands, Cricklewood, à Londres.                                                                                 |
| Hue, Auguste .. .. .                    | Rédacteur au Ministère des Travaux Publics, 2<br>Delambre, à Paris.                                                |
| Huet, Charles Edmond .. .. .            | Inspecteur Gén. des Pts. et Châcés. 12, Boulevard d<br>à Paris.                                                    |
| Hughes, Professor D. E., F.R.S. .. .. . | Care of the London Joint Stock Bank, 69, Pall<br>Londres, S.W.                                                     |
| Hugo, Léopold .. .. .                   | Chef de Bureau au Ministère des Travaux Publics, 1<br>des Sts. Pères, à Paris.                                     |
| Huguet, Docteur.. .. .                  | 117, rue St. Lazare, à Paris.                                                                                      |
| Humbert, Docteur A... .. .              | 3, rue Jacquart (XIe. Arrondissement), à Paris.                                                                    |
| Hunter, Rudolph, M... .. .              | Mechanical Expert, 901, Walnut Street, à Philadelpl<br>Palencia, (Espagne.)                                        |
| Hureau de Villeneuve, Abel .. .. .      | 95, rue Lafayette, à Paris.                                                                                        |
| Hurel (Abbé) Théodore Joseph.. .. .     | Curé à Lieusaint (Seine-et-Marne).                                                                                 |
| Ibarlucea-Martinier, Casto .. .. .      | Professeur au Collège de Paredes de Nava, Provi<br>Palencia (Espagne).                                             |
| Ideville, Comte d' .. .. .              | rue Notre-Dame de Lorette, à Paris.                                                                                |
| Infreville, Georges d' .. .. .          | Electricien de la "Western Union Telegraph Co.<br>West 43rd Street, à New York.                                    |
| Irvine, James M... .. .                 | 8, Mulberry Place, à Edinbourg (Ecosse).                                                                           |
| Iselin, William .. .. .                 | Au Havre.                                                                                                          |
| Isopotatoff, Nicolas .. .. .            | Directeur des Télégraphes de Ville, 14, rue des Po<br>St. Petersburg.                                              |
| Itasse-Geuffron, Georges .. .. .        | 66, Faubourg Monmartre, à Paris.                                                                                   |
| Itasse-Geuffron, Léon.. .. .            | 29, rue des Martyrs, à Paris.                                                                                      |

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| hkoﬀ .. .. .                              | Ingénieur Électricien, 52, rue de Naples, à Paris.                                                    |
| et (Charles) .. .. .                      | Dr. des Postes et Télégraphes, à Toulouse (Haute-Garonne).                                            |
| s, — .. .. .                              | Sous Inspecteur des Postes et Télégraphes, à Tunis.                                                   |
| s, Ernest .. .. .                         | Bibliothécaire au Ministère des Postes et Télégraphes, 26, rue Bertrand, à Paris.                     |
| n, Eugène .. .. .                         | Contrôleur du Sce. Technique des Télégraphes, 66, rue Daguerre, à Paris.                              |
| , — .. .. .                               | Membre de l'Institut, 2, Carrefour de l'Odéon, à Paris.                                               |
| , F. .. .. .                              | 91, rue du Loup, à Bordeaux.                                                                          |
| n, — .. .. .                              | Membre de l'Institut, Directeur de l'Observatoire, de Meudon (Seine et Oise).                         |
| r, C. .. .. .                             | Capitaine d'Artillerie, 1, place St. Thomas d'Aquin, à Paris.                                         |
| , Docteur Emile .. .. .                   | à Dortan (Ain).                                                                                       |
| , — .. .. .                               | Docteur Médecin, 6, rue du Mont Thabor, à Paris.                                                      |
| on, Georges .. .. .                       | 4, rue des Prouvaires, à Paris.                                                                       |
| nt, Benoît .. .. .                        | Electricien, 25, rue Pierre-Charron, à Paris.                                                         |
| , Joseph .. .. .                          | Constructeur Electricien, 12, rue Jonfosse, à Liège (Belgique).                                       |
| rt, Léon .. .. .                          | Directeur de l'Observatoire populaire du Trocadéro, à Paris.                                          |
| nd, Charles .. .. .                       | 51, rue de Ponthieu, à Paris.                                                                         |
| a, Fleeming .. .. .                       | Professor M. Inst. C.E., LL.D., F.R.S., 3, Great Stuart Street, à Edinbourg.                          |
| gham, Hubert E. H. .. .. .                | Membre du Parlement Britannique, Longridge Towers, Berwick-on-Tweed (Angleterre).                     |
| Auguste .. .. .                           | à Ligueil (Indre-et-Loire).                                                                           |
| y, C. .. .. .                             | 26, rue Montaigne, à Paris.                                                                           |
| Georges .. .. .                           | 6, rue de Clichy, à Paris.                                                                            |
| aux, J. .. .. .                           | 56, rue des Cévennes, à Paris.                                                                        |
| lin, Léon .. .. .                         | 3, rue Lamartine, à Paris.                                                                            |
| lin, Paul Louis .. .. .                   | Ingénieur électricien, Inspecteur principal de la Compagnie P. L. M., 4 Quai du Marché-Neuf, à Paris. |
| Armand .. .. .                            | 29, rue Berthollet, à Arcueil (Seine).                                                                |
| icourt, — .. .. .                         | Commis principal des Postes et Télégraphes, à Laon (Aisne).                                           |
| nt, Pierre .. .. .                        | Ingénieur, 84 bis, rue de Grenelle, à Paris.                                                          |
| rer, Ch. .. .. .                          | 6, rue du Louvre, à Paris.                                                                            |
| , Josef .. .. .                           | Sécrétaire de l'Exposition internationale d'Électricité de Wien, 7, Niebelungengasse, à Wien.         |
| Gaston .. .. .                            | à Nonancourt (Eure).                                                                                  |
| e, H. R. .. .. .                          | Roland Viilas, West Barnet, Londres, N.                                                               |
| er, Alfred .. .. .                        | 25, rue Clapeyron, à Paris.                                                                           |
| ove, Prosper Van den .. .. .              | Sénateur, 183, Coupure, à Gand.                                                                       |
| iff, Pierre François Hyacinthe de .. .. . | Au Château de Pénanru, à Saint Pol-de-Léon (Finistère.)                                               |
| vyk, J. J. Van .. .. .                    | Membre des Etats généraux, à la Hayte (Hollande).                                                     |
| James Cameron .. .. .                     | Government Telegraph Department, à Calcutta (Indes-Orientales).                                       |
| — .. .. .                                 | Constructeur d'Instruments de précision à Delft (Pays-Bas).                                           |
| off, J. .. .. .                           | Professeur à l'Université de Berlin.                                                                  |
| nko, Alexis .. .. .                       | à Kharkow (Russie).                                                                                   |
| lin-Schwartz .. .. .                      | Maire du Huitième arrondissement de Paris, 60, Avenue Hoche, à Paris.                                 |
| man, J. Th. .. .. .                       | 79, Vleurgat, Bruxelles.                                                                              |
| doyère, E. de .. .. .                     | Contrôleur Principal du Télégraphe des Chemins de fer de l'Est, à Paris.                              |
| oulaye, de .. .. .                        | Administrateur des Postes et Télégraphes, 99, rue de Grenelle, à Paris.                               |
| rier, Louis Léon .. .. .                  | Commis pal. des Télégraphes, 20, rue des Ecoles, à Paris.                                             |
| , de .. .. .                              | Ingénieur en Chef des Pts. et Chaussées, 51, rue de Varennes, à Paris.                                |
| sière, — .. .. .                          | à Grenoble (Isère).                                                                                   |
| a, Manuel .. .. .                         | Ingénieur des Mines, 5, Plaza, Independencia, à Madrid.                                               |
| ne, — .. .. .                             | Ingénieur en Chef du Sce. Télégraphique, à Constantinople.                                            |
| abrade, Justin .. .. .                    | Commis des P. et Télégraphes à Capdonac gare (Aveyron).                                               |
| nt, Docteur .. .. .                       | Professeur d la Faculté de Médecine de Lille, 53, Quai Bourbon, à Paris.                              |
| ge, Ernest .. .. .                        | Électricien, Hôtel Monnet, à Grenoble (Isère).                                                        |
| re, Auguste .. .. .                       | Imprimeur, 9, rue de Fleurus, à Paris.                                                                |
| , William .. .. .                         | Electricien, 219, Boulevard d'Enfer, à Paris.                                                         |
| ille, Emile .. .. .                       | Ingénieur à l'Usine électro. métallurgique de Montredon près Marseille.                               |
| é, Alfred Louis .. .. .                   | Dr. en Médecine, 40, Boulevard du Montparnasse, à Paris.                                              |
| de, Armand .. .. .                        | Député de la Gironde, 130, Faubourg St. Honoré, à Paris.                                              |

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| Lalande, Félix de .. .. .       | Ingénieur Civil, 18, rue St. Sulpice, à Paris.                                                                                         |
| Lalé, Célestin .. .. .          | Receveur des Postes et Télégraphes, à Lodève (Hérault).                                                                                |
| Lallement, Maurice .. .. .      | Ingénieur de la Société des Téléphones, 48, rue Paris.                                                                                 |
| Lamothe, Ch. .. .. .            | Receveur des Télégraphes, à Pauillac (Médoc) (Gironde).                                                                                |
| Lamy, Ernest J. B. .. .. .      | 1, Place des Jacobins, à Lyon.                                                                                                         |
| Lan, Charles .. .. .            | Inspecteur Génl. des Mines, 234, Bd. St. Germain.                                                                                      |
| Landur, N. .. .. .              | Docteur en Médecine, Licencié ès sciences, rue Orléans, à Paris.                                                                       |
| Lang, Irénée .. .. .            | à Schlestadt (Alsace).                                                                                                                 |
| Langdon, William Edward .. .. . | Supérintendent Engineer of Telegraph Department, Grove Terrace, à Londres.                                                             |
| Laporte, Louis Pascal .. .. .   | 28, rue d'Orléans, à Lorient (Morbihan).                                                                                               |
| Lapparent, de .. .. .           | Ingénieur des Mines, 3, rue Tilsitt, à Paris.                                                                                          |
| Lardy, Auguste .. .. .          | Ingénieur à Fourchambault (Nièvre).                                                                                                    |
| La Rivière, A. de .. .. .       | à Bordeaux.                                                                                                                            |
| Larochole, G. V. .. .. .        | Electricien, 11, Boulevard de Clichy, à Paris.                                                                                         |
| Larroque, Firmin .. .. .        | Physicien, 42, Avenue Herbillon, à St. Mandé (Seine).                                                                                  |
| Lartigue, Henri .. .. .         | Directeur de la Société des Téléphones, 41, rue de la Martin, à Paris.                                                                 |
| La Taille, I. de .. .. .        | Directeur Ingénieur des Télégraphes, à Orléans (Loiret).                                                                               |
| Latchinoff, Dimitry .. .. .     | Professeur à l'Institut des Bois et Forêts, à St. Pétersbourg.                                                                         |
| Lattès, Eugène .. .. .          | Ingénieur de la Société Lyonnaise de Constructions Électriques et de Lumière Électrique, 19, Boulevard Italiens, à Paris.              |
| Laugaudin, de .. .. .           | Ingénieur en Chef du Cadastre d'Égypte au Caire (Égypte).                                                                              |
| Laumonnier, Jules .. .. .       | 5, rue St. Etienne, à Angers (Maine-et-Loire).                                                                                         |
| Laurens, Camille .. .. .        | Ingénieur, 82, rue Taitbout, à Paris.                                                                                                  |
| Laurent, Jules .. .. .          | 38, Allées de Tourny, à Bordeaux.                                                                                                      |
| Lauriol, Jules .. .. .          | 64, rue Caumartin, à Paris.                                                                                                            |
| Laval, — .. .. .                | Contrôleur des Télégraphes, à Bar-le-Duc.                                                                                              |
| Lavallée, Jean .. .. .          | Administrateur de la Société l'Advertisseur Electrique, 44, Boulevard Haussmann, à Paris.                                              |
| Laverchère, Edmond .. .. .      | 14, rue St. Georges, à Roubaix (Nord).                                                                                                 |
| Lavergne, Gérard .. .. .        | Ingénieur Civil des Mines, 19, Quai de la Forêt, à Nîmes.                                                                              |
| Le Baron .. .. .                | Ingénieur Electricien, 44, rue Boursault, à Paris.                                                                                     |
| Lebeaupin, — .. .. .            | Chimiste 1, rue des Irlandais, à Nantes.                                                                                               |
| Le Blanc, Félix .. .. .         | Ingénieur Civil, Professeur à l'école Centrale des Manufactures, 103, Avenue de Villiers, à Paris.                                     |
| Leblanc, Maurice .. .. .        | 9, rue Taylor, à Paris.                                                                                                                |
| Lebon, Ernest .. .. .           | Professeur de Géométrie, 121, rue Monge, à Paris.                                                                                      |
| Lecoivre, P. .. .. .            | Professeur à l'école Centrale des Arts et Manufactures, Membre du Jury de l'Exposition d'Electricité, 61, Boulevard Voltaire, à Paris. |
| Le Cordier, Paul .. .. .        | Docteur ès Sciences, 1, rue Bourbon-le-Château, à Paris.                                                                               |
| Le Divellec, Emmanuel .. .. .   | 18, rue St. Pierre, à Lorient.                                                                                                         |
| Le Dolley, Louis .. .. .        | Contrôleur des Télégraphes, 15, rue Terme, à Lyon.                                                                                     |
| Le Febvre-Roncier, Paul .. .. . | 61, rue St. Lazare, à Paris.                                                                                                           |
| Legendre, Henri .. .. .         | 7, rue du Neufbourg, à St. Lô (Manche).                                                                                                |
| Legentil-Parent, .. .. .        | Propriétaire, 6, Place de la Préfecture, à Arras (Calais).                                                                             |
| Legrand, Pierre .. .. .         | 53, Boulevard Picpus, à Paris.                                                                                                         |
| Leguay, E. .. .. .              | Electricien, 79-81, rue de la Tombe-Issoire, à Paris.                                                                                  |
| Leitch, A. E. .. .. .           | Electrical Apparatus, à Dayton (Ohio) U.S.A.                                                                                           |
| Le Maréchal (fils), E. .. .. .  | à St. Servan (Ile et Vilaine).                                                                                                         |
| Lemercier de Jauvelle .. .. .   | Directeur de l'Institut Polyglotte, 16, rue Grange-Francoise, à Paris.                                                                 |
| Lemonnier, Hippolyte .. .. .    | Constructeur Electricien, 26, Avenue de Suffren, à Paris.                                                                              |
| Le Moyne .. .. .                | Directeur des Postes et Télégraphes, à Epinal (Vosges).                                                                                |
| Le Neve-Foster, Arthur .. .. .  | East Hill, Wandsworth, Londres, S.W.                                                                                                   |
| Lennep, H. M. J. Van .. .. .    | Ingénieur électricien, 3, Fredrikspark, à Harlem.                                                                                      |
| Le Normand, E. .. .. .          | 22, rue Murillo, à Paris.                                                                                                              |
| Léon, Alexandre .. .. .         | Cours du Chapeau Rouge, No. 11, à Bordeaux.                                                                                            |
| Lenz, R. .. .. .                | Professeur à St. Petersburg (Russie).                                                                                                  |
| Lepesqueux, Albert .. .. .      | 4, rue de Strasbourg, à St. Denis (Seine).                                                                                             |
| Lequeux, Paul .. .. .           | Directeur des Fonderies et Laminiers de Romilly, à Reims-sur-Andelle (Eure).                                                           |
| Leray (ainé), Marc .. .. .      | Bureau restant, à Bordeaux.                                                                                                            |
| Lesage, Louis .. .. .           | 78, Boulevard Latour-Maubourg, à Paris.                                                                                                |
| Lesourd, Paul .. .. .           | Président de la Chambre de Commerce de Tours, à Tours.                                                                                 |
| Lesquoy, Léon .. .. .           | Ingénieur, Chef de Service aux Chemins de fer de l'Etat, à Luxembourg (Grand Duché).                                                   |
| Lesseps Ferdinand de .. .. .    | Membre de l'Institut, 7, rue St. Florentin, à Paris.                                                                                   |
| Lestelle, X. .. .. .            | Sous Inspecteur des Postes et Télégraphes, à Marseille.                                                                                |
| Létrange, Léon .. .. .          | 1, rue des Haudriettes, à Paris.                                                                                                       |



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| Maurice .. .. .                     | Professeur au Collège de France, 258, Boulevard St. Germain, à Paris.                                       |
| Emile .. .. .                       | Ingénieur E.C.P. 57, Avenue du Maine, à Paris.                                                              |
| H. F. W., Ass. S.T.E. .. .. .       | Stanhope Villa, Woodfield Road, Redland, Bristol, Gloucestershire (Angleterre).                             |
| waite, William .. .. .              | à Reims (Marne).                                                                                            |
| mier des Plantes, Comte de Serres.. | (Docteur) Directeur de l'Institut Electro-Homœopathique, 45, rue de Lyon, à Lyon.                           |
| nd, Henri .. .. .                   | à Ratacolo (Grèce).                                                                                         |
| ann, Docteur H., .. .. .            | Chimiste Electricien, Nelson Wharf, Milwall, Londres, E.                                                    |
| anu, Louis .. .. .                  | Directeur de l'Agence Générale d'électricité, 11, rue Montyon, à Paris.                                     |
| Auguste .. .. .                     | Fabricant de Bijouterie, 23, rue des Archives, à Paris.                                                     |
| st, C. .. .. .                      | 5, rue Debelleyne, à Paris.                                                                                 |
| ann, G. .. .. .                     | Professeur à la Faculté des Sciences de Paris.                                                              |
| Comte Pompée de .. .. .             | 26, rue Spiga, à Milan (Italie).                                                                            |
| , H. .. .. .                        | Constructeur Electricien, 9, Place Voltaire, à Paris.                                                       |
| iberg, Auriste .. .. .              | Dr. en Médecine de la Faculté de Paris, 15, rue Auber, à Paris.                                             |
| , Maurice .. .. .                   | Membre de l'Institut S. Directeur de l'Observatoire, 6, rue Cassini, à Paris.                               |
| etti, Jules .. .. .                 | Inspecteur des Télégraphes, à Florence (Italie).                                                            |
| Jacques .. .. .                     | 5, Place des Vosges, à Paris.                                                                               |
| 1, J. G. .. .. .                    | 1, Wardrobe Place, Doctors' Commons, Londres, E.C.                                                          |
| , Louis .. .. .                     | Ingénieur, à Bellegarde (Ain).                                                                              |
| F. .. .. .                          | Ingénieur en Chef des Ponts et Chaussées, Directeur du Service des Phares, 7, rue Nouvelle, Paris.          |
| Ferdinand Jules .. .. .             | 43, Boulevard de Reuilly, à Paris.                                                                          |
| F. .. .. .                          | Docteur en Médecine, 33, Avenue des Gobelins, à Paris.                                                      |
| y, Frank .. .. .                    | District Manager, The National Telephone Co., 13, Panmure Street, Dundee.                                   |
| Max .. .. .                         | Ingénieur 38, Avenue de l'Opéra, à Paris.                                                                   |
| ..                                  |                                                                                                             |
| y, J. W. .. .. .                    | De la Compagnie des Câbles Mackay-Bennett, 9, rue de Tilsit, à Paris.                                       |
| nzie, J. Kenneth, D. .. .. .        | 18, Warwick Street, Regent Street, Londres.                                                                 |
| lab, Donald .. .. .                 | Ingénieur électricien des Usines de la Société Générale des Téléphones, à Bezons (Seine-et-Oise).           |
| , Paul.. .. .                       | Inspecteur du Contrôle des Postes et Télégraphes, 34, Avenue de Villiers, à Paris.                          |
| e, Louis .. .. .                    | Ingénieur électricien, 3, rue Louis-le-Grand, à Paris.                                                      |
| ard, P. .. .. .                     | 6, place d'Auvergne, à Brest (Finistère).                                                                   |
| Raoul .. .. .                       | Banquier, à Castres (Tarn).                                                                                 |
| Alphonse .. .. .                    | Télégraphiste, à Verdun (Meuse).                                                                            |
| meuve, Similien .. .. .             | Ingénieur Electricien, 6, rue Gresset, à Nantes.                                                            |
| Baron de .. .. .                    | 23, rue Montbazou, à Bordeaux                                                                               |
| erstjerna-Williams, Morgan J. ..    | B.A. Cambridge, Killay House, à Killay (Glamorganshire), England.                                           |
| oux, L. .. .. .                     | Agent special des Télégraphes, 71, rue Caumartin, à Paris.                                                  |
| st, Félix .. .. .                   | Ingénieur, 41, rue de Douai, à Paris.                                                                       |
| , Genet .. .. .                     | Commis des Télégraphes, 52, rue St. Placide, à Paris.                                                       |
| n, Alexis-Louis .. .. .             | Professeur de physique, à Rambervillers (Vosges).                                                           |
| ire, Amédée .. .. .                 | Machines à coudre, 5, Boulevard de Strasbourg, à Paris.                                                     |
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| lac, Paul .. .. .                   | Télégraphiste, 5, rue Jaubert, à Marseille.                                                                 |
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| chal, Gabriel .. .. .               | 22, Avenue Carnot, à Paris.                                                                                 |
| , — .. .. .                         | Membre de l'Institut, 11, Boulevard Delessert, à Paris.                                                     |
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| Davy .. .. .                        | Directeur de l'Observatoire de Montsouris, à Paris.                                                         |
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| g, L., et E. Mertz .. .. .          | De Paris, à Bâle (Suisse).                                                                                  |
| l, — .. .. .                        | Fabricant d'Horlogerie, et de mouvements pour la Télégraphie, à St. Nicolas d'Aliermont (Seine-Inférieure). |
| 1, Louis de .. .. .                 | à Montraboch, près Lezignan (Aude).                                                                         |
| iez, Ramon.. .. .                   | Professeur de Physique et de Chimie, à Onâ, province de Burgos (Espagne).                                   |
| ay, J. L. .. .. .                   | Caoutchouc et Gutta Percha Electriques, 34, rue de Franco, à Bruxelles.                                     |
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| Pietra-Santa, Docteur de ..     | Rédacteur en Chef du <i>Journal d'Hygiène</i> 54, Wagram, à Paris.                                   |
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Beez, Ch., rue Rochechouart, 45, Paris.  
 Bernard, J., faubourg du Temple, 4, Paris.  
 Bonfante et Maisonneure, rue Gresset, 3, Paris.  
 Branville, H. de et Cie, rue de la Montagne-Genève, 25, Paris.  
 De Bar, rue Nationale, 231, Lille.  
 Duplay, E., Avenue de la Motte-Piquet, 6, Paris.  
 Duterme, Ch., rue Blainville, 11, Paris.  
 Gérard, Antoine, place St. Lambert, 5, Liège.  
 Marais, rue du Bac, 49, Rouen.  
 Pierret et Quellier, rue Meslay, 37, Paris.  
 Rodde, F., cité Magenta, 3, Paris.  
 Société de l'Electrophone. L. Maiche et C. Louis-le-Grand, 3, Paris.  
 Société Franco-Indienne d'Industrie et d'Electricité, cité Monthyon, 6, Paris.  
 Voghels, C., rue des Pierres, 87, Bruges.

## Appareils Electro-Médicaux.

*E.—Electro-Medical Instruments.*

*G.—*

Angerville, Dr., rue de Grammont, 20, Paris.  
 Arnould, E., rue d'Enghien, 73.  
 Aubry, A., boulevard Saint Michel, 6, Paris.  
 Barda, Dr., rue Blanche, 49, Paris.  
 Bonnet, Q., boulevard des Filles-du-Calvaire, Paris.  
 Boudet, Dr., rue d'Isly, 4, Paris.  
 Bréguet, quai de l'Horloge, 39, Paris.  
 Breton frères, rue des Ecoles, 52, Paris.  
 Brewer frères, rue St. André-des-Arts, 43, Paris.  
 Bunon, rue Vieille-du-Temple, 27, Paris.  
 Chardin, Charles, rue de Châteaudun, 5, Paris.  
 Courtot, C., rue Caumartin, 73, Paris.  
 De Bar, rue Nationale, 231, Lille.  
 Desruelles, L. avenue Percier, 8, bis, Paris.  
 Dubos, Ch., avenue de la Motte-Piquet, Paris.  
 Ducretet, E., et Cie., rue Claude-Bernard, Paris.  
 Dupré, rue Campagne-Première, 5, Paris.  
 Encausse et Canosie, rue Rochechouart, 57, Paris.  
 Feuquières, J., rue de Sèvres, 89, Paris.  
 Fosse, rue de l'Hôtel-de-ville, 12, Lyon.  
 Gaiffe, A., rue St. André-des-Arts, 40, Paris.  
 Gerboz, rue des Ecoles, 52, Paris.  
 Gloesener, dle. A., Avenue d'Avroy, 76, Liège.  
 Guérin, F., rue du Temple, 55, Paris.  
 Le Brun, H., rue Pastourelle, 32 et 34, Paris.  
 Loret, rue Mignon, 5, Paris.  
 Mora, boulevard Richard-Lenoir, 93, Paris.  
 Oré et Chagnoleau, rue du Palais-de-Justice, Bordeaux.  
 Pulvermacher, J. L., rue Chabrol, 69, Paris.  
 Trouvé, G., rue Vivienne, 14, Paris.  
 Vert, C. X., passage Bouchardy, 20, Paris.

## Appareils servant aux mesures électriques.

*E.—Electrical Testing Instruments.*

*G.—Probirinstrumente für Electricität*

Armengaud aîné Ch. Eug., rue Saint Sébastien, 45, Paris.  
 Bigeon, rue de la Tombe-Issoire, 75, Paris.

**areils servant aux mesures**

**électriques—*continué.***

, boul. Bourdon, 39, Paris.  
 Ph., rue des Petits-Champs, 47, Paris.  
 ., avenue de la République, 13, Paris.  
 uai de l'Horloge, 39.  
 , rue Sedaine, 28, Paris.  
 et Bianchi, rue Champollion, 15, Paris.  
 , A., Charleville, Ardennes.  
 et Cie., Allevard, Isère.  
 F., rue Montmartre, 118, Paris.  
 e Internationale des Téléphones, rue  
 ze-Apôtres, 24, Bruxelles.  
 ie, Ch., avenue Duquesne, 30, Paris.  
 E., rue Daguerre, 77, Paris.  
 Ad., rue des Fourneaux, 42, Paris.  
 J. E., boul. Saint-Michel, 123, Paris.  
 Vve. Ch., rue des Croisades, 4,  
 8.  
 , rue du Bac, 134, Paris.  
 res, rue des Poitevins, 6 et 8, Paris.  
 . A., rue de l'Odéon, 21, Paris.  
 , rue Clapeyron, 25, Paris.  
 E. et Cie., rue Claude-Bernard, 75, Paris.  
 - Froment, rue Notre-Dame-des-  
 , 85, Paris.  
 ., successeur d'Andriveau, rue Cam-  
 première, 5, Paris.  
 boul. de Vaugirard, 132, Paris.  
 A., rue St. André-des-Arts, 40, Paris.  
 ie de Paris, 19, Clichy.  
 dle. A., avenue d'Avroy, 70, bis.,  
  
 int, rue Neuve-Saint-Merry, 11, Paris.  
 m., rue Montmorency, 5, Paris.  
 J. et Cie., rue de Rocroy, 8, Paris.  
 Signereux, successeur de Hardy, avenue  
 otte—Piquet, 6, Paris.  
 ). et Cie., quai des Gds. Augustins, 55,  
  
 r, Raoul, avenue de Nouilly, 122, Paris.  
 ue Bertrand, 26, Paris.  
 ., rue d'Hauteville, 30, Paris.  
 J., quai d'Asnières, 77, Villeneuve-  
 me.  
 T., avenue de Paris, 81, Saint Denis.  
 ., rue de la Tombe-Issoire, 79 et 81,  
  
 i, Lad., rue Montagne-Sainte-Gené-  
 5, Paris.  
 h., rue du Maine, 3, Paris.  
 lenry fils, rue Lafayette, 6, Paris.  
 Ach., rue Fontaine-au-Roi, 57, et rue  
 u, 29, Paris.  
 éon, rue d'Arcole, 21, Paris.  
 passage Bosquet, 19, Paris.  
 , E., rue de Bourgogne, 65, Paris.  
 lo, rue Boursault, 44, Paris.  
 , Soc. fils et Cie., rue Sangier, 26, Paris.  
 boul. Richard Lenoir, 93, Paris.  
 B. V., rue Rempart de la Miséricorde,  
 .  
 ., rue Laromiguière, 9, Paris.  
 . Alf., rue Saint Denis, 163, Paris.  
 ay, rue Vaneau, 38, Paris.  
 ., cour des Petites-Écuries, 8, Paris.  
 rue Charlot, 28, Paris.  
 al. Saint Germain, 130 et 132, Paris.  
 Th., rue de Marais, 27, Gand.  
 ., boul. de Courcelles, 17, Paris.  
 . Hector et Fils, rue Monsieur-le-  
 Paris.  
 t Cie., rue St.-Maur, 208, Paris.  
 ., rue Vivienne, 14, Paris.  
 e, E., rue Mandar, 10, Paris.

**Appareils pour la Galvanoplastie.**

*E.—*

*G.—*

Chutaux, T., place du Marché, 1, Levallois-Perret.  
 Courtot, rue Caumartin, 75, Paris.  
 Mora, C., boul. Richard Lenoir, 93 et 95, Paris.

**Argenteurs et Doreurs.**

*E.—Platers and Gilders.*

*G.—*

Akinow, rue Montmartre, 78, Paris.  
 Auzolle, rue St. Croix de la Bretonnerie, 42  
 Paris.  
 Beauferey, L., rue Charlot, 31, Paris.  
 Besançon, Ch., F. Ducroux suc., rue Chapon,  
 10, et passage des Gravilliers, 2, Paris.  
 Beziat, Henri, rue Paradis-Poissonnière, Paris.  
 Boulenger, Adolphe, rue du Vert-Bois, 5, Paris.  
 Brun, Ve. H., rue du Temple, 159, Paris.  
 Cailar, N., Bayard et Cie., rue Grange aux Belles,  
 37, Paris.  
 Champion, rue du Temple, 79, Paris.  
 Christofle et Cie., rue de Bondy, 56, Paris.  
 Compagnie des Bronzes, rue d'Assant, 22,  
 Bruxelles, Belgique.  
 Dalifol, A., et Cie., quai Jemmapes, 172, Paris.  
 Delor François, rue de Seine, 41, Paris.  
 Demarquet frères, rue du Temple, 79, Paris.  
 Demilly, rue Grande, 15, Sèvres, Paris.  
 Desclercs (succ. de A. Gombault et Desclercs),  
 rue des Marnis, 66, Paris.  
 Drault, boul. Richard Lenoir, 102, Paris.  
 Ducroux, rue Chapon, 4, Paris.  
 Dupont et Alker, Haeren, Bruxelles, Belgique.  
 Durand, Geor., J. Rocher succ., rue des Gravil-  
 liers, 75, Paris.  
 Folie et Denamur, quai Jemmapes, 82, Paris.  
 Fondu, J. B., Vilvorde, Belgique.  
 Frenais, A., boul. Richard Lenoir, 77, Paris.  
 Gaiffe, L. Ad., rue Saint André des Arts, 40,  
 Paris.  
 Gérard, anc maison Nicolle, rue Turbigo, 7, et  
 boul. Voltaire, 41, Paris.  
 Henry, Ve. Th., rue Folie Méricourt, 46, Paris.  
 Lacroix et Lamy, rue de Bondy, 36, Paris.  
 Lagriffoul, rue Charlot, 62, Paris.  
 Leclère, E., rue Bonaparte, 58, Paris.  
 Lejeune, A., rue du Temple, 83, Paris.  
 Lecherf, G., rue Haute, 88, Bruxelles, Belgique  
 Lemaire et Cie. (orfèvrerie Christofle), boul. des  
 Italiens, 33, Paris.  
 Maire, J., place du Palais de Justice, 3, Bruxelles,  
 Belgique.  
 Mappin et Webb, de Londres et Scheffield (A  
 Deotto et Cie.), rue Vivienne, 34, Paris.  
 Ménage, J., rue Gambey, 22, Paris.  
 Mignot, C., mais. Doisy, E. L. excellent succ., rue  
 de Saintonge, 47, Paris.  
 Moncomble, E., rue Vivienne, 9, Paris.  
 Mongenot, E., et Cie., rue Sedaine, 17, Paris.  
 Pernot et Semin, rue Réaumur, 7, Paris.  
 Renaudot et Maquiny, Fg. St. Denis, 87, Paris.  
 Saglier, V., rue d'Enghien, 12, Paris.  
 Société des couverts Alfénide, rue Hauteville, 4,  
 Paris.  
 Vandeveld, Fils, place du Grand Sablon, 12,  
 Bruxelles, Belgique.

## Articles en Ivoire, Bois pour Appareils Électriques.

*E.—Ivory and Wooden Articles for Electrical Apparatus.*

*G.—*

Leblanc, J., rue Boutrie, 14, Paris.  
Loreau, rue de Turenne, 1, Paris.

## Ascenseurs Électriques (fab. et cons. de).

*E.—Electric Lifts.*

*G.—*

Jarriant et Magne, rue Pierre-Charron, 25, Paris.  
Siemens frères, rue Picot, 8, Paris.

## Avertisseurs d'incendie.

*E.—Electric Fire Alarms.*

*G.—*

Asselin, C., rue des Arts, 11, Levallois, Paris.  
Barbier, P., avenue de la Grande-Armée, 51, Paris.  
Bréguet, quai de l'Horloge, 39, Paris.  
Closset, E., passage des Postes, 4, Bruxelles, Belgique.  
Collin, rue Montmartre, 118, Paris.  
Dupré, G., rue Campagne Première, 5, Paris.  
Haumann, Devos D., rue du Nord, 61, Bruxelles, Belgique.  
Joly, A., rue du Cherche Midi, 19, Paris.  
Loppens, A., Gosselies, Hainaut, Belgique.  
Maiche, L. et Cie., rue Louis le Grand, 3, Paris.  
Mildé fils, Soc. Ch., rue Laugier, 26, Paris.  
Muller, E., rue d'Arenberg, 42, Bruxelles, Belgique.  
Petit, G., rue Blomet, 91, Paris.  
Ravaglia, Joseph Chevalier, Ravenne.

## Bains Électriques.

*E.—Electric Baths.*

*G.—Electrische Bäder.*

Barda, Dr. Emile, rue Blanche, 49, Paris.  
Directeur de l'établissement spécial d'électro-balnéothérapie.  
Darin, Dr., boul. des Capucines, 41, Paris.  
De Bar, rue Nationale, 231, Lille.  
Gautier, Ve., rue Sévigné, 11, Paris.  
Gocel, Mme., boul. Sébastopol, 77, Paris.  
Potin fils, avenue St. Mandé, 80, Paris.

## Balances Électriques.

*E.—Electric Scales*

*G.—*

Baillehache, E., De, rue Ampère, 54, Paris.  
Société Ind. et Com. Edison, à Ivry-sur-Seine, Paris.

## Bateaux Électriques.

*E.—Electric Boats.*

*G.—*

Trouvé, G., rue Vivienne, 14, Paris.

## Bouées Télégraphiques en fer (co

*E.—Telegraph Iron Buoys.*

*G.—*

India Rubber, Gutta Percha and Te Works Co., boul. Sébastopol, 97, Paris  
Siemens frères, rue Picot, 8, Paris.

## Boussoles.

*E.—Compass Makers.*

*G.—Compass-Macher.*

Bisson, E., boul. Bourdon, 39, Paris.  
Bréguet, quai de l'Horloge, 39, Paris.  
Carpentier, rue Champollion, 15, Paris.  
Carpentier, rue Clapeyron, 25, Paris.  
Ducretet E. et Cie., rue Claude-Bernard, 75  
Dumoulin-Froment, r. N. D. des Cham Paris.  
Godfrin, faub. St. Martin, 52, Paris.  
Hayet et Lignereux, avenue de la Motte 6, Paris.

## Boutons pour Contacts.

*E.—Contact Buttons.*

*G.—*

Beez, Ch., rue Rochechouart, 45, Paris.  
Couthier, G., fils., rue de Sèze, 9, Paris.  
Crosse, rue des Vosges, 3, Paris.

## Brevets d'Invention.

*E.—Patent Agencies.*

*G.—Patent-Bureau.*

Action Co-opérative, rue des Halles, 11, F  
Agence Anglaise et Française, Bon Chaussée-d'Antin, 8, Paris.  
Armengaud aîné, rue St. Sébastien 45, Pa  
Armengaud jeune, boul. de Strasbourg, 23  
Bachelu, Hotel de Ville, 49, Lyon.  
Blétry frères, boul. de Strasbourg, 2, Pari  
Bretton, L. C., rue Grenette, 24, Lyon.  
Brocard, rue Ferrandière, 44, Lyon.  
Bureau des Brevets d'Invention, avenue d 66, Lyon.  
Cahen, Alb., boul. Saint Denis, 1, Paris.  
Casalonga, D. A., rue des Halles, 15, Par  
Desnos, Ch., boul. Magenta, 11, Paris.  
Gonnard, F., cours Morand, 36, bis, Lyo  
Lépinette et Rabilloud, avenue de Saxe, 64

## Bronzes (fab. de) et Appareils

### Lumière Électrique.

*E.—Electroliers, Lamps & Lustres for Electri*  
*G.—*

Beetz, Ch., rue Rochechouart, 45, Paris.  
Gagneau et Cie., rue Lafayette, 45, Paris  
Ranvier, G., rue Turenne, 116, Paris.  
Susse frères, place de la Bourse, 31, Paris

## Cabines sourdes pour Transmis Téléphoniques.

*E.—Sound proof cabins for Telephonic Transm*  
*G.—*

Voillereau, rue Chapon, 21 et 42, Paris.  
Walker, rue Rochechouart, 42, Paris.



**Ables et fils isolés (fab. de)**

*E.—Covered Wire and Cables.*

y et Oriol, Saint Chamond, Loire.  
 lr., rue de l'Abbaye, 16, Paris.  
 me., rue Montmartre, 18, Paris.  
 quai de l'Horloge, 39, Paris.  
 et Cie., rue Saint Denis, 182, Paris.  
 t Cie., rue Saint Ambroise, 25, Paris.  
 A., fabricants de fils télégraphiques,  
 a République, 30, Puteaux, Seine.  
 J. N., rue des Tournelles, 52, Paris.  
 bber, Gutta Percha & Telegraph Works  
 ul. Sébastopol, 97, Paris.  
 jeune, rue Belidor, 10, Paris.  
 re, J. J., et fils, rue de la Verrerie, 58,

ie Laugier, 42, Paris.  
 I., rue du Théâtre, 7, Paris.  
 , rue Saint Martin, 4, Paris.  
 J. O., rue de Commynes, 10, Paris.  
 anonyme des Câbles Électriques, boul.  
 nann, 33, Paris.  
 anonyme des hauts fourneaux, fonderies,  
 s de Franche Comté, avenue Daumesnil,  
 118, Paris.  
 générale des téléphones (Usines Rattier  
 ), rue Caumartin, 41, Paris.  
 arisienne de fonderie et de laminage,  
 Chemin-Vert, 11, Paris.  
 , F. A., Rugles, Eure.

**Cables Métalliques.**

e St. Denis, 269, Paris.

**Ables Sous-Marins (Fab de)**

*E.—Submarine Cables.*

bber, Gutta Percha & Telegraph Works  
 mited, Persan-Beaumont, Seine-et-Oise.  
 I., rue du Théâtre, 7, Grenelle, Paris.  
 anonyme des Câbles Electriques, boul.  
 an, 33, Paris.  
 générale des Téléphones (Usines Rattier  
 , rue d'Aboukir, 4, Paris.

**izations Electriques ouvrante.**

Espret, rue Chaponnière, 3, Genève,

**chouc et Gutta-Percha Bruts  
 (marchands).**

*rude India Rubber and Gutta Percha.*

*G.—Caoutchouc-Händler.*

I., rue Bichat, 29, Paris.  
 J. B., place des Vosges, 15, Paris.  
 manche et Cie., rue d'Aboukir, 2, Paris.  
 Cie., rue de la Verrerie, 43, Paris.  
 ve.), quai Jemmapes, 108, Paris.  
 .., rue Vivienne, 40, succursale, boul.  
 pol, 129, Paris.

**Caoutchouc et Gutta-Percha Bruts  
 (marchands)—continué.**

Hecht frères et Cie, rue du Château d'eau, 20,  
 Paris.  
 India Rubber, Gutta Percha, and Telegraph Works  
 Co., Limited, boul. Sébastopol, 97, Paris.  
 Ledoux et Bar, boul. Sébastopol, 46, Paris.  
 Lerchenthal, H., rue Montmorency, 16, Paris.  
 Mager, A., rue d'Aboukir, 11, Paris.  
 Menier, rue du Théâtre, 7, Grenelle, Paris.  
 Morellet (les fils d'Aug.), rue Sévigné, 27, Paris.  
 Norat, C., rue de Maubeuge, 39, Paris.  
 Oulmann, rue de l'Entrepôt, 30, Paris.  
 Rattier et Cie., rue d'Aboukir, 4, Paris.  
 Sarassin, E., rue du Château d'Eau, 27, Paris.  
 Saviolle, P., fils, rue Lévigé, 30, Paris.  
 Venot, A., et P. St. Germain, rue de la Barbette,  
 2, Paris.

**Caoutchouc Manufacturé.**

*E.—(Manufactured) India Rubber.*

*G.—*

Anderson, Abbott et Anderson, rue Martel, 8,  
 Paris.  
 Bandier, J., et Cie, rue du Jardin des Plantes, 44,  
 Marseille.  
 Bar, E., boul. Sébastopol, 46, Paris.  
 Barge, rue de la Paix, 15, Paris.  
 Baux, F., rue Charlot, 10, Paris.  
 Bergeruand, F., père et fils, rue des Archives, 16,  
 Paris.  
 Berlyn, A., boul. Sébastopol, 16, Paris.  
 Bernard, M., rue de Turbigo, 48, Paris.  
 Bernier (Vve. Félix) et Cie., rue Vivienne, 2, Paris.  
 Bideau, J. Q., rue Chapon, 5, Paris.  
 Bloc, L., rue des Petites Ecuries, 56, Paris.  
 Boileau, faub. St. Martin, 52, Paris.  
 Borrisou, C., Tiens, 3, ter., Lille.  
 Boucley, P., et Cie., rue Notre Dame de Nazareth,  
 12, Paris.  
 Bouchier et Cie., rue de la République, 29,  
 Marseille.  
 Brunessaux, J., rue Saint Denis, 89, Paris.  
 Calisch, O. A., cité Trévis, 12, Paris.  
 Caramello, M., passage Thévin, rue de Mercœur,  
 17, Paris.  
 Carron, A., rue Notre Dame, 215, Lille.  
 Cassassa, F., fils et Cie., rue Saint Martin, 257,  
 Paris.  
 Cassasse et Verstraet (Letcelier et Verstraet, succ.)  
 rue de Turbigo, 47, Paris.  
 Charlot et Cie., rue Saint Ambroise, 25, Paris.  
 Christy, F., rue de Béthune, 41, Lille.  
 Claude, H., faub. Poissonnière, 48, Paris.  
 Croye Magnau, A., et Cie., boul. National, 124,  
 Marseille.  
 Decourdemanche, A., et Cie., rue d'Aboukir, 2,  
 Paris.  
 Degeorges, rue de la Grande Truanderie, 45, Paris.  
 Degrave, E., rue de l'Oumnelet, 73, Roubaix.  
 Degrave, Emile, dépositaire à Paris, Boitel, rue  
 d'Enghien, 27, Paris.  
 Deiss, E., rue Volta, 15, Paris.  
 Denayrouze, L., rue Saint Pétersbourg, 30, Paris.  
 De Nevrezé, A., rue Intendance, Bordeaux.  
 Desremaux, L., Vieux Faubourg, 8, Lille.  
 Gottschalbe et Cie., faub. Saint Martin, 76, Paris.  
 Goulard, A., (T. Mercier succ.), boul. Magenta,  
 31, Paris.  
 Guillaume fils aîné, rue du Temple, 51, Paris.  
 Guibeil, A., dépôt à Paris, rue Vivienne, 40, Paris.  
 Guibal, C., rue Vivienne, 40, Paris.  
 Hutchinson, A., et Cie., rue Hauteville, 1, Paris.

## Caoutchouc Manufacturé—*continué.*

Imbert, Jules, agence et dépôt de la Compagnie Américaine, J. L. Martiny et Cie., rue Haxo, 19, Marseille.  
 India Rubber, Gutta Percha, & Telegraph Works Co., boul. Sébastopol, 97, Paris.  
 Lacollonge, P., quai des Brotteaux, 28, Lyon.  
 Larcher, rue d'Aboukir, 7, Paris.  
 Lefebvre, H., boul. des Écoles, 21, Lille.  
 Leronard, fils et Benjamin, rue de Trévis, 49, Paris.  
 Lestrade, F. de, rue Chevalier Rose, 27, Marseille.  
 Le Tellier et Verstraet, rue Turbigo, 47, Paris.  
 Lévy, A., rue Hauteville, 34, Paris.  
 Lugult fils, rue Bouguière, 44, Bordeaux.  
 Mager, A., rue d'Aboukir, 11, Paris.  
 Magnin, J. et Cie., Quai de Serrin, 55, Lyon.  
 Martine, Mme., rue de Roubaix, 25, Lille.  
 Martiny, J. L., et Cie, rue des Petites Ecuries, 13, Paris.  
 Menier, rue du Théâtre, 7, Grenelles, Paris.  
 Petit, J., rue Saint Remi, 56, Bordeaux.  
 Rattier et Cie., rue d'Aboukir, 4, Paris.  
 Rouzard, J. C., rue Colbert, Marseille.  
 Torilhon, Verdier et Cie, rue d'Enghien, 25, Paris.  
 Vivez, rue Douves, 41, Bordeaux.  
 Wardavoir, Noel, rue Esquemoise, 61, Lille.  
 White, Child et Cie., boul. de la Liberté, 89, Lille.

## Charbons Électriques.

*E.—Electric Carbons.*

*G.—Electrische Kolen.*

Ballat, rue Saint Fargeau, 5, Paris.  
 Blouzon, Edme, rue N. D. de Nazareth, 30, Paris.  
 Carré, E., rue de l'Estrapade, 19, Paris.  
 Carré, Ferd, rue de Reuilly, 48, Paris.  
 Goderel, E., avenue d'Eylau, 172, Paris.  
 Goodwin, Charles R., boul. des Capucines, 35, Paris.  
 Levy, E. (brevets F. Carré), avenue du Maine, 57, Paris.  
 L'Hôte, Armand, rue Marqfoy, 7, Paris.  
 Lizeray, A., rue du Bois, 18, Belleville, Paris.  
 Michaëls, J. P., avenue de l'Opéra, 35, Paris.  
 Mignon et Rouart, boul. Voltaire, 137, Paris.  
 Napoli, D., rue du faub. Poissonnière, 98, Paris.  
 Pierrard, O., rue Pelleport, 147, Paris.  
 Sautter, Lemonnier et Cie., avenue de Suffren, 26, Paris.

## Chapes et Pierres pour instruments de précision.

*E.—Precious Stones for Pivots.*

*G.—*

Grosguenaint, rue Saint-Merri, 11, Paris.

## Claviers en Ivoire et Celluloid.

*E.—Ivory and Celluloid Finger Keys.*

*G.—*

Monti. Ch., rue Oberkampf, 127, Paris.

## Compteurs de Tours.

*E.—Revolution Counters.*

*G.—*

Buss, W. A., rue Desaix, 1, Paris.  
 Deschiens, Eng., boul. St. Michel, 123, Paris.  
 Sainte, A., rue Taylor, 22, Paris.

## Contrôleurs Électriques de Re

*E.—Electrical Tell-tales for Watches*

*G.—*

Billandot, L., rue Léonce, 5, Bellevue, Oise.  
 Boivin, A., rue de l'Abbaye, 16, Paris.  
 Collin, A. F., rue Montmartre, 118, Paris.  
 Jarriant et Magne, rue Pierre-Charon, 2  
 Napoli, C., rue du faub. Poissonnière, 98

## Courroies de transmission

*E.—Driving Bands.*

*G.—Maschinen.*

Becquet, Cornille et Beuscart, rue Flax  
 Lille  
 Berger, Place St. Michel, 2, Lyon.  
 Berguerand père et fils, rue des Arch  
 Paris.  
 Bertholon, A., quai de la Guillotière, 9,  
 Bisma, H. Van, boul. de Strasbourg, 43,  
 Borissow, C., à Frens, 3, ter., Lille.  
 Boutry-Van, Isselsteyne, rue du Vieux-  
 aux Montons, 8, Lille.  
 Chenon, rue St. Quentin, 22, Paris.  
 Christy, F., rue de Béthune, 41, Lille.  
 Constant, G., rue Nationale, 172, S, Lil  
 Corcellet, Bernard et Cie., rue de la l  
 Lyon.  
 Couchet, H., Jallifier et Cie., rue de la Gu  
 24, Lyon.  
 Decourdomanche, A. et Cie, rue d'Aboukir  
 D'Esping, Ch., Avenue Parmentier, 11,  
 la Roquette, 118, bis, Paris.  
 Derrumeaux-Delomazure, rue de la F  
 Lille.  
 Doche, rue St. Maur, 14, Paris.  
 Domange, Lemièrre et Cie., boulevard  
 74, Paris.  
 Dufour, jeune et fils, rue St. Pierre de l  
 Paris.  
 Dumas, E. et Cie., rue de la République,  
 Famezelle, Lavigueril, Amiens.  
 Faure, Cadet, rue François-Dauphin, 4,  
 Félix-Hunebelle, Chaussée St. Pierre, 17  
 François, J., rue Nationale, 247, Lille.  
 Gallien et Charton, qua de la Charité, 2,  
 Hartwig, Van Biema, boul. de Strasb  
 Paris.  
 Imbert, Jules, rue Haxo, 19, Marseille.  
 India Rubber, Gutta Percha and l  
 Works Co., boul. Sébastopol, 97, Pari  
 Lacollonge, P., avenue de la Saxe, 218,  
 Lacollonge, P., quai des Brotteaux, 28.  
 Léger frères, Place des Hospices, 7, Ly  
 Liebermann, J., boulevard du Temple.  
 Lilvan, E. aîné, boul. de la Paix, 14,  
 seillo.  
 Magnin, J. et Cie., quai de Serrin, 55, l  
 Martine, J. B., rue Quenette, 5, Lille.  
 Martine, Mme., rue de Roubaix, 15, Lil  
 Martiny, J. L. et Cie., rue des Petites  
 13, Paris.  
 Masson, rue Popincourt, 52, Paris.  
 Menier, rue du Théâtre, 7, Paris.  
 Moseley, David et fils, cité Magenta, et  
 Magenta, 33, bis, Paris  
 Neut. L. et L. Dumont, rue Notre-I  
 Lille.  
 Nugues, Aimé, quai de la Charité, 12,  
 Paillart, Gmc., (P. Boulland, successe  
 St. Martin, 171, Paris, usine à Bolig  
 Placide-Pettereau le Jeune frère et fils.  
 Remault, Indre et Loire, et rue Be  
 28, Paris.

**de transmission—continué.**

venue de Saxe, 66, Lyon.  
ai des Brotteaux, 27, Lyon.  
J. C. et Cie., rue Colbert, Marseille.  
 Coventry, rue Alibert, 10, Paris.  
ild et Cie., boul. de la Liberté, 89,

**idres en Verre (fabricants.)**

*E.—Glass Vases.*

*G.—*

runon, rue Péclot, 1 à 7, Paris.  
D. frères, rue des Guillemites, 3 à 7,  
A., et Cie., rue Notre-Dame-de-Naza-  
, Paris.  
Paradis-Poissonnière, 10, Paris.  
ue de Poitou, 41, Paris.  
né, rue de Poitou, 25, Paris.

**s en Zinc et Diaphragmes pour Piles.**

*Zinc and Porous Pots for Batteries.*

Cie., rue du Faub. Poissonnière, Paris.  
L., et Cie., rue des Vieilles-Haud-  
l, Paris.  
Messdach et Cie., rue Saint Paul, 28,

Hip., Fondettes, près Tours, Indre-  
Entrepreneur breveté, fabriques  
de cylindres en zinc et appareils  
s systèmes pour la télégraphie, four-  
les lignes télégraphiques du gouverne-  
de l'étranger et des lignes de Chemins

J. B. T. et fils, rue St. Maur, 146,

**tes pour Boîtes d'Instruments.**

*et Makers for Electrical Instrument Cases.*

., rue du Roi-de-Sicile, 26, Paris.  
ie, rue Amelot, 74, Paris.  
in, H., rue Saint Jacques, 71, Paris.

**te et Vulcanite (fab. et march.)**

*Ebonite and Vulcanite Manufacturers.*

*F.—*

Ch., rue de Turbigo, 13, Paris.  
ze, Dr. L., de la Société des Spécialités  
ques réunies, rue de Saint Pétersbourg,  
s.  
I., et Cie., rue de l'École de Médecine,  
ber, Gutta Percha & Telegraph Works  
ul. Sébastopol, 97, Paris.  
., Représ. de la Cie. de Hanovre, rue  
tes-Ecuries, 11, Paris.  
J. L., et Cie., boul. de Hainaut, 127,  
es, Belgique.  
J. L., et Cie. de la Compagnie Franco-  
ine, rue des Petites-Ecuries, 13, Paris.  
ie du Théâtre, 7, Paris.

**Eclairage Electrique.**

*E.—Electric Lighting.*

*G.—Electrisches Licht.*

Agence Générale d'Électricité (Louis Liepmann,  
directeur), passage des Panoramas, Galerie des  
Variétés, Paris.  
Baudet, Cloris, rue St. Victor, 90, Paris.  
Beau et Bertrand Eaillet, rue St. Denis, 226,  
Paris.  
Beez, Ch., rue Rochechouart, 45, Paris.  
Clémançon, rue Lamartine, 23, Paris.  
Compagnie Continentale Edison, avenue de  
l'Opéra, 33, Paris.  
Compagnie Électrique, rue d'Argenteuil, 19,  
Paris.  
Compagnie Française d'électricité, boul. Eugène,  
47, bis., Neuilly, Paris.  
Compagnie Parisienne d'Éclairage Électrique,  
rue Dufesnoy, 25, Paris.  
Delaporte, G., rue des Bourdonnais, 33, Paris.  
Duboscq, J. et A., rue de l'Odéon, 21, Paris.  
Ducommun, boul. Magenta, 18, Paris.  
Duplay, E., avenue de la Motte-Piquet, Paris.  
Edison, avenue de l'Opéra, 33, Paris.  
Estève, A., à la Réole, Gironde.  
Faure Electric Accumulator Co., avenue de l'  
Opéra, 5, Paris.  
Fontaine, H., rue Drouot, 15, Paris.  
French Electrical Power Storage Co., avenue de  
l'Opéra, 5, Paris.  
Goodwin, Charles R., boul. des Capucines, 35,  
Paris.  
Jarriant et Magne, rue Pierre-Charron, 25, Paris.  
L'Éclairage Électrique Société Anonyme au  
capital de 6,550,000 francs, rue Lecourbe, 259,  
Paris.  
Levent, J., boul. Magenta, 93, Paris. Installa-  
tions d'éclairage électrique de tous genres,  
éclairage à la nuit, pour fêtes soirées, travaux  
de nuit.  
Mildé, Fils et Cie (Lx. Ch.) rue Laugier, 26,  
Paris.  
Reynier, E., rue Benouville, 3, Paris.  
Sautter, L., Lemonnier et Cie., avenue de Suffren,  
26, Paris.  
Société Anonyme d'électricité, brevets, A.  
Gérard, passage Cottin, 8, Paris.  
Société l'Éclairage Électrique, rue Lecourbe, 250,  
Paris.  
Société de Const. Mécaniques et d'Appareils  
Électriques, rue St. Florentin, 11, Paris.  
Société Industrielle et Commerciale Edison,  
avenue de l'Opéra, 33, Paris.  
Société Lyonnaise de Constructions Mécaniques  
et d'Éclairage Électrique, rue de Grammont,  
19, Paris.  
Salignac et Cie., rue St. Maur, 208, Paris.  
Syndicat Français de la Lampe Soleil, avenue  
de Wagram, Paris.  
Vallot fils, rue d'Arcole, 13, St. Etienne.

**Ecoles et Établissements des Sciences Électriques.**

*E—Electric and Scientific Schools.*

*G.—*

Association pour l'Etude d'Électricité, siège  
Social, boul. Haussmann, 37, Paris (D. Mon-  
nier, ingénieur directeur de laboratoirs, rue  
Piccini, avenue de Bois de Boulogne, Paris).  
École de Physique et Chimie Industrielles, au  
Collège Rollin, Paris.

**Écoles et Établissements des Sciences  
Électriques—continué.**

École d'Horlogerie, faubourg du Temple, 99, Paris.  
École Pratique de Chimie et de Métallurgie, Fr Weill, rue des Petites-Écuries, 13 Paris.  
École Supérieure de Télégraphie, au Ministère des Postes et Télégraphes, rue de Grenelle, 99, à 103 Paris.  
Laboratoire de Physique Directeur Desains, membre de l'Institut, à la Faculté des sciences, Paris.

**Electricité appliquée aux sciences, à  
l'industrie, à la médecine et aux arts.**

*E.—Electrical Apparatus Manufacturers.*

*G.—Electrical Apparatus—Fabr.*

Achard, A., rue de Provence, 60, Paris.  
Alvergnot frères, rue de Sorbonne, 10, Paris.  
Andriveau, G., rue Campagne-Première, 5, Paris.  
Ateliers Ducommun, boul. Magenta, 18, Paris.  
Aubry, A., boul. St Michel, 6, Paris.  
Barbe, E., boul. Voltaire, 156, Paris.  
Barbier et Fenestre, rue Curial, 82, Paris.  
Barbier, E., rue Fromentin, 9, Paris.  
Baron, J., rue Fondaudouge, 85, Bordeaux.  
Baudet, Cloris, rue St. Victor, 90, Paris.  
Bonnet, G., boul. des Filles du Calvaire, 5, Paris.  
Borrell, A. P., rue des Petits Champs, 47, Paris.  
Borel-Martinaud, Avenue de Neuilly, 85, Paris.  
Biloret, A., et Mora, C., boul. Richard Lenoir, 93, Paris.  
Breguet, quai de l'Horloge, 39, Paris.  
Breton frères, rue des Ecoles, 52, Paris.  
Brewer frères, rue St. André des Arts, 43, Paris.  
Buchin, A., rue Holland, 11, Bordeaux.  
Carpentier, J., rue Champollion, 15, et rue Delambre, 20, Paris.  
Casanova, J., rue Marceau, 98, Paris.  
Chaudron, L., boul. St Germain, 229, Paris.  
Chertemps, A., passage St Sébastien, 11, Paris.  
Chevalier, L. B., rue du Pressoir, 24 Paris.  
Combettes, L. de, rue de Bondy, 92, Paris.  
Com. Parisienne d'Éclairage par l'Électricité, rue Daubigny, 25, Paris.  
Courtot, C., rue Caumartin, 75, Paris.  
Dany et Lepage, rue du Faub. St. Martin, 59, et boul. de Strasbourg, 30, Paris.  
Defrançois, Q., place Dauphine, 24, Paris.  
Delaporte, rue des Bourdonnais, 33, Paris.  
Delaunay, rue des Fourniaux, 42, Paris.  
Deschamps, C. E., boul. St Michel, 123, Paris.  
Desrozières, rue de l'Échiquier, 42, Paris.  
Desvignes, L., avenue Perrier, 8 bis, et rue la Boétie, 36, Paris.  
Douce et Cie, rue de Rivoli, 116, Paris.  
Ducretet, E., et Cie, rue Claude-Bernard, 75, Paris.  
Edison, avenue de l'Opéra, 33, Paris.  
Félix, C., rue St Lazare, 28, Paris.  
Fichet, A., rue des Martyrs, 19, Paris.  
Fontenilles V., boul. Haussmann 83, et Chaussée-d'Antin 15, Paris.  
Fortin J. H., rue de Valenciennes, 27, Paris.  
Guiffret, Darot, Hôtel de Ville, 13, Lyon.  
Gadus, A., boul. de la Villette, 73, Paris.  
Gérard, A., passage Cottin, 8, Paris.  
Goumard, rue Michel-le-Comte, 23.  
Girard, rue Hippolyte Labou, 6 Paris.  
Goussier, Ch., rue de Naples, 72 Paris.  
Guerra, E., rue Montmorency, 5, Paris.  
Guérol, rue Daguerre, 57, Paris.

**Electricité appliquée aux sciences  
l'industrie, à la médecine et aux arts  
continué.**

Guesdon-Leprince, rue Montorgueil, 67, Paris.  
Hardy, E., av. de la Motte-Piquet, 6, Paris.  
Hasle fils, rue Châteauneuf, 21 Paris.  
Hempel, O. et Cie, quai des Grands-Augustins, Paris.  
India Rubber, Gutta Percha and Telegraph Works Co., Limited, boul. Sébastopol, 97.  
Jarrant et Magné, rue Pierre-Charron, 21.  
Jarrant jeune, rue Beldier, 10, Paris.  
Journaux, J., rue de Valenciennes 50, Grenelle.  
Lapointe, G., rue St Sébastien, 9 Paris.  
Laurent, rue de l'Odéon, 21, Paris.  
Lausberg, G., rue Pasteur-le 32 et 34, Paris.  
Le Brun, rue Pastourelle, 42 et 34, Paris.  
Laguay, E., rue de la Tombe-Lassure, 70, Paris.  
Lelièvre, A., rue des Coutures, 6, St. Germain.  
Lepault, Henry, rue Lafayette, 6, Paris.  
Lesieur, rue des Deux-Portes, 6, Paris.  
Lonsau, A. fils, rue de Richelieu, 29, Paris.  
Loret, rue Mignon, 5, Paris.  
Luzard, L., rue l'Ange, 21 Paris.  
Mathieu, rue Sautouge, 20 Paris.  
Merisens, A. de, rue Beaussant, 41, Paris.  
Mignon et Roland, boul. Voltaire, 137, Paris.  
Mide, fils et Cie, rue Lavoisier, 25 Paris.  
Munier, rue Neuve, 7, Angers.  
Mors, L., rue St Martin, 4 bis, Paris.  
Noc, rue Lavoisier, 25, Paris.  
Osselin, H., rue de Maine, 1, Angers.  
Parent, J., rue Debelleyma, 19, Paris.  
Pulvermacher, J. L., rue St Martin, 238.  
Rattier et Cie, rue d'Aboukir, 1, Paris.  
Radiguet et fils, boul. des Filles-du-Calvaire, Paris.  
Reynier, E., rue Benouville, 3, Paris.  
Royer, L., rue St Martin, 225 Paris.  
Ruhmkorff, rue Delambre, 20 Paris.  
Saisse, F., rue des Grands-Augustins, 12.  
Sautter, Lemoine et Cie, avenue de la Chapelle, Paris.  
Seguy et fils, rue de Monsieur-le-Prince, 6, Paris.  
Serrin, Vor, boul. St Martin, 1, Paris.  
Siemens frères, rue Picot, 8 et rue de la Harpe, 179 et 181, Paris.  
Société anonyme des câbles électriques, Haussmann, 43, Paris.  
Soc. de l'Électrophone, L. Marché et C., Louis-le-Grand, 5 Paris.  
Société des machines Magnéto-Kinéma, rue Drouot, 15 Paris.  
Société industrielle de l'Électricité, rue Taillandier, Paris.  
Société Lyonnaise de Constructions Mécaniques et de Lumière Électrique, rue de Valenciennes, 17 et 19 Paris.  
Société nouvelle de l'Éclairage par l'Électricité, rue de Provence, 60, Paris.  
Société universelle d'Électricité, rue de Provence, 11 Paris.  
Solignac et Cie, rue St Marc, 208 Paris.  
Troyat, G., rue Vivienne, 14 Paris.  
Villet fils, rue d'Arcis, 15, St. Germain.  
Vissac-Mercier, A., rue de Valenciennes, 69.  
Vinn, G., rue de Châteauneuf, 33 Paris.  
Vida, Jules et fils, route de Fleury, Paris, Seine.  
Vivier, F., rue Vancau, 38 Paris.  
Voussier, A., rue St Esprit, 41 Paris.  
Waffelort, Doure Josef, rue de la Harpe, 70.  
Wandenberg, H., rue des Trois-Marchés, 30.



**Electricité Domestique.**

*E.—Electricians—Domestic.*

*G.—*

L. et Cie., rue, Louis-le-Grand, 3, Paris.

**Electrophone.**

*E.—Electrophones.*

*G.—*

le l'Electrophone, L. Maiche et Cie., rue  
-le-Grand, 3, Paris.

**Fermetures Électriques.**

*—Electric Door and Window Fasteners.*

l, L., rue de Courcelles, 161, Paris.  
r, E., rue Montbaron, 116, Versailles.  
r, J. M. A., boul. de Strasbourg, 2, Paris.

**res (Fabricants et Marchands).**

*—Felt Manufacturers and Dealers.*

us, rue de Turenne, 39, Paris.  
et Rime, rue de la Banque, 14, Paris.

**Fils d'Acier.**

*E.—Steel Wire.*

*G.—Stahl-Draht.*

J., rue des Vinaigriers, 37 et 38, Paris.  
L., rue Amelot, 90, Paris.  
et Guillaume, rue des Bourdonnais, 30,

Fonderies et Acieries Nationales, rue de  
35, Paris.

on, W. D., rue de Marseille, 8, Paris.  
, J., Son et Cie., rue de Lancry, 17,

er et Cie., rue de Provence, 56, Paris.  
W. et fils, rue de Bondy, 66, Paris.  
anon. des Acieries et Forges de Firminy,  
Voltaire, 36, Paris.  
Anon. des Forges de Châtillon et Com-  
y, rue Charras, 4, Paris.  
Anon. des Forges et Acieries de St.  
lyte, Faubourg Poissonnière, 8, Paris.

**Fils de Bronze.**

*E.—Bronze Wire.*

*G.—*

, P. et Cie., rue d'Argenteuil, 19, Paris.  
A. et Montefiore-Levi, Angoulême.

**Fils de Cuivre et Laiton.**

*E.—Copper and Brass Wire.*

*G.—*

l, J. M., rue des Tournelles, 56, Paris.  
dinger, E., faub. du Temple, 16, Paris.  
F., rue de Turenne, 14, Paris.  
ère et fils, rue de la Verrerie, 58, Paris.  
e et Cie., rue des Haudriettes, 1, Paris.  
, rue de Rambuteau, 20, Paris.  
l, L. O., rue de Commynes, 10, Paris.  
Anon. des forges de Châtillon et Com-  
y, rue Charras, 4, Paris.  
ris de Fonderie et de Laminage, rue du  
in-Vert, 14, Paris  
A., et Montefiore-Lévi Angoulême.

**Fils de Fer.**

*E.—Iron Wire.*

*G.—Eiserner-Draht.*

Aubert et Marqueset, rue des Vinaigriers, 43,  
Paris.  
Briançon, rue St. Denis, 205, Paris.  
Carpentier, A., et Cie., rue des Marais, 40, Paris.  
Cassart de Fernemont, Gembloux, Belgique.  
Corcelet, faub. St. Martin, 188, Paris.  
Crochet P. et Cie., rue de Montreuil, 48, Paris.  
Dallemagne, rue Grange aux Belles, 59, Paris.  
Dawans, A. et Orban, rue Grétry, Liège,  
Belgique.  
Denille fils, rue Albouy, 27, Paris.  
Dopfeld, rue des Tournelles, 52, Paris.  
Felten et Guillaume, rue des Bourdonnais, 30,  
Paris.  
Hitier, boul. Ménilmontant, 101, Paris.  
Jowa, J. rue Grétry, 149, Liège, Belgique.  
Lemoine, impasse Marcès, 11, rue Poppincourt,  
39, Paris.  
Petitjean et Belpêche, rue des Vinaigriers, 29,  
Paris.  
Rotterer et Bollot, rue Lourmel, 58, Grenelle,  
Paris.  
Rougier, rue Chapon, 25, Paris.  
Royston, J. Son & Co., rue de Lancry, 17, Paris.  
Société an. de Grivénée, Grivénée, Belgique.  
Société an. des forges et aciéries de St. Hippolyte,  
rue du Faubourg-Poissonnière, 8, Paris.  
Société an. des forges de Châtillon et Commentry,  
rue Charras, 4, Paris.  
Société an. des Hauts-Fourneaux de Franche  
Comté, avenue Daumesnil, 166 et 168, Paris.  
Société Métallurgique de Gorey, rue des Francs-  
Bourgeois, 34, Paris.  
Société Métallurgique de Périgord, rue Taitbout,  
80, Paris.  
Sohier et Cie., rue de Lafayette, 121, Paris.  
Verschave, rue Pavée, Marais, 17, bis Paris.

**Fils en Nickel.**

*E—Nickel Wire.*

*G.—*

Gaspard et Belle, rue de Saintonge, 62, Paris.  
Soc. anon. le Nickel, rue de la Chaussée d'Antin,  
38, Paris.

**Fils de Platine.**

*E.—Platinum Wire.*

*G.—*

Gaiffe, L. A., rue Saint André des Arts, 40, Paris.  
Sorgue, P., passage Courbeau, 9, et Faubourg  
du Temple, 9, Paris. Fils de platine depuis  
3 100/m et audessus.

**Fils Électriques.**

*E.—Electric Wire.*

*G.—Electrischer Draht.*

Alamagny et Oriol, Saint Chamond, Loire.  
Barbier, E. F., rue Fromentin, 9, Paris.  
Beaufils, M. F., boul. Saint André, 4, Paris.  
Biloret et Mora, boul. Richard Lenoir, 93, Paris.  
Boileau père, rue de Sèvres, 11, Paris.  
Boivin, A., rue de l'Abbaye, 16, Paris.  
Bonis, Mme., rue Montmartre, 18, Paris.  
Borrell, A. P., rue des Petits-Champs, 47, Paris.  
Bréguet, quai de l'Horloge, 39, Paris.  
Briançon, rue Saint Denis, 182, Paris.  
Callaud et fils, rue du Bocage, 26, Nantes.

**Fils Électriques** —*continué.*

Carue, Ph J B, rue St Denis, 269, Paris.  
 Chappée, Le Mans, Sarthe.  
 Charlot et Cie, rue St Ambroise, 25, Paris.  
 Chouvin et Maria Durbel, rue de Banquier, 25, Paris.  
 Collin, A., rue Montmartre, 118, Paris.  
 Deland, J. A., rue des Fourniaux, 42, Paris.  
 Dopfeld, J. N., rue des Tournelles, 52, Paris.  
 Douce et Cie, rue Rivoli, 116, Paris.  
 Fontenilles, V., boul. Haussmann, 38, Paris.  
 Frion et Thierry, rue du Roi du Sicile, 50, Paris.  
 Geoffroy, H., rue de l'Ermitage, 50, Paris.  
 Geschger, rue St Paul, 28, Paris.  
 Hache et Papan-Lehal-ar, Vierzon, Cher.  
 Hardy, avenue la Motte Piquet, 6, Paris.  
 Hodel, J. H., rue Farlaudeg, 57, Bordeaux.  
 Hulst, F., rue de Paris, 14, Paris.  
 Humbelle, rue de Solferino, 2, Paris.  
 India Rubber, Gutta Percha & Telegraph Works Company, Limited, boul Sébastopol, 97, Paris.  
 Jarrant, rue Pierre Charron, 58, Paris.  
 Jarrant jeune, rue Behdor, 10, Paris.  
 Lagarde, rue de Sévres, 15, Paris.  
 Laveissière, J. J. et fils, rue de la Verrerie, 68, Paris.  
 Legay, rue Langier, 42, Paris.  
 Létrange, L. et Cie, rue des Vieilles Haudriettes, Paris.  
 Levi, Montefiore, Chaussée de Mons, 415, Anderlecht.  
 Lichtenfelder, G., avenue de la Grande Armée, 45, Paris.  
 Mangenot, rue d'Ulm, 48, Paris.  
 Martel et Cie, rue Meyerbeer, 5, Paris.  
 Menier, rue du Théâtre, 7, Paris.  
 Mons, C., boul Richard Lenoir, 93, Paris.  
 Mors L., rue Saint Martin, 4, Paris.  
 Mouchel et Cie, rue de Communes, 10, Paris.  
 Papan, boul Montparnasse, 51, Paris.  
 Parod, E. U., Plessis Trévise, par Villiers-sur-Marne.  
 Perin-Grados, boul. Richard Lenoir, 106, Paris.  
 Preisch, P., boul. Richard Lenoir, 82, Paris.  
 Rattier et Cie, rue d'Aboukir, 4, Paris.  
 Schneider et Cie, rue de Provence, 56, Paris.  
 Société Anon. des Forges de Châtillon Commentry, rue Charratet, 4, Paris.  
 Société Anonyme des Câbles Electriques, boul. Haussmann, 33, Paris.  
 Société Anonyme des hauts Fourneaux, Fonderies, et Forges de Franche Comté, avenue Dumesnil, 116 et 118, Paris.  
 Société Anonyme Le Nickel, rue de la Chaussée d'Antin, 38, Paris.  
 Société Parisienne de Fonderie et Laminage, rue du Chemin Vert, 11, Paris.  
 Tailly, de la, Orleans.  
 Tixeront, A. L., rue de l'Arbalète, 36, Paris.  
 Vallot fils, rue d'Arcole, 43, St Etienne.  
 Weiler et Levi-Montebore, Angoulême, Charente.

**Fils Isolés (fab. de)**

*E. Coated Wire—Gutta Percha*  
*G.*

TAYLOR, GEORGE (GOSLAND), Doe Side Electric Works, Neston, Cheshire, England.  
*Voir index des annonces Britanniques.*

**Freins Électriques.**

*E. Electric Brakes*  
*G.*

Société Nouvelle de l'Embrayage par l'Électricité, rue Lafayette, 189, Paris

**Galvanoplastie.**

*E. — Electrotypers.*

*G. — Galvanoplastic.*

Allain frères, rue du Temple, 175, Paris.  
 Bertrand, A., rue des Archives, 3, Paris.  
 Beaufours, rue Saint-Denis, 255, Paris.  
 Blenner, H., rue Feydeau, 3, Paris.  
 Bloch et Rosenwald, rue Pastourelle, 24, Paris.  
 Blot, rue Bleue, 7, Paris.  
 Boist, rue Ste-Anne, 49, Paris.  
 Boudreaux, L., fils, rue Hautefeuille, 8, Paris.  
 Boudreaux fils, rue Monsieur-le-Prince, 21, Paris.  
 Boulanger, A., rue Vertbois, 4, Paris.  
 Brémont, rue de Valenciennes, 24, Paris.  
 Carlar, N. Bivard et Cie, rue Grammont, 37, Paris.  
 Calibro, rue Réaumur, 46, Paris.  
 Casalunga, D. A., rue des Halles, 15, Paris.  
 Caux, E., rue Debelleyme, 5, Paris.  
 Cellere, L., rue de Bondy, 50, Paris.  
 Christophe et Cie, rue de Bondy, 50, Paris.  
 Cie parisienne d'éclairage par l'électricité, Dufrénoy, 25, Paris.  
 Croizon, passage de la Roue, 5, Paris.  
 Delaunay, rue St Gilles, 12, Paris.  
 Fauquères, J., rue de Sévres, 89, Paris.  
 Folie, rue St Maur, 204, Paris.  
 Fould et, rue St Sauveur, 14, Paris.  
 Gaffie, A., rue St Andre-des-Arts, 40, Paris.  
 Gautret, Pierre, avenue du Maine, 175, Paris.  
 Halin, R., rue St Claude, Marais, Paris.  
 Hugole, boul. Bonne Nouvelle, 41, Paris.  
 Jacquard, rue Mazarine, 48, Paris.  
 Lionnet, rue Debelleyme, 5, Paris.  
 Le Marec et Cie, boul. des Italiens, 13, Paris.  
 Marin, rue Monsieur-le-Prince, 51, Paris.  
 Massonnet, C. E. et Cie, rue du Faubourg Denis, 54, Paris.  
 Michel, V., rue Duguay-Trouin, 1, Paris.  
 Oudry, L., Usnes, avenue de Versailles, Paris.  
 Pailloux, boul. du Temple, 36 et 42, Paris.  
 Pallet, rue Lacharrière, 21, Paris.  
 Pape, rue d'Angoulême du Temple, 72, Paris.  
 Roussel, J., rue Visconti, 13, Paris.  
 Savary et Sime, rue Sage, 22, Paris.  
 Stasser, A., boul. St Germain, 122, Paris.  
 Wagner, rue des Petites-Champs, 47, Paris.  
 Weil, F., rue des Petites-Pources, 13, Paris.

**Globes et Lanternes (fab.)**

*E.*

*G.*

Avoiron et Clément, boul. Voltaire, 80, Paris.  
 Spécialités de cristaux et globes pour l'éclairage électrique.  
 Clert, G., rue Dronot, 25, Paris.  
 Defert, rue du Château d'En, 40, Paris.  
 Leune, rue des Deux-Portes, 20 et 21, Paris.  
 Liassute et Casson, rue Martel, 42, Paris.  
 Macs frères, cour des Petites-Fourches, Paris.  
 Meyer et Cie, rue de Valenciennes, 255, Paris.  
 Minette et Cie, boul. Sébastopol, 150, Paris.  
 Monnet H., rue de la Folie-Méricourt, 10, Paris.  
 Monnet, rue Martel, 42, Paris.  
 Paris et Cie, rue Parais-Lamartinière, Paris.  
 Verreries et Cristalleries de la Seine, Paris.  
 Sabon, 42, Paris.  
 Vidie, route de Flandres, 48, Paris.

**isseurs (fabricants).**

*-Lubricating Apparatus.*

L., rue Bouret, 7, Paris.  
Cie., boul. Magenta, 124, Paris.  
uai de Jemmapes, 200 et 202, Paris.

**erie Electrique (constr.)**

*E.—Electrical Clocks.*

*7.—Electrische Uhren.*

ie de Rovigo, 39, Alger.  
go, 1, Alger.  
., rue Fromentin, 9, Paris.  
-en-Provence.  
avenue d'Orléans, 29, Paris.  
de l'Horloge, 39, Paris.  
F., rue des Haudriettes, 6, Paris.  
saint Maur, 189, Paris.  
Montmartre, 118, Paris.  
ouillet, rue de Marchienne, 8,  
vêque, Belgique.  
E., boul. Saint Michel, 123, Paris.  
des Croisades, 32, Bruxelles, Bel-

de Saintonge, 21, Paris.  
ie Taitbout, 6, Paris.  
it Eugénie, 22, Paris.  
., pl. Saint Lambert, 5, Liège,

ie des Batignolles, 80, Paris.  
venue d'Avroy, 70, bis, Paris.  
, rue de la Bourde, 13, Tours, et  
re-et-Loire.

rue Blanche, 7, Paris.  
Cie., rue de la Montagne-Sainte-  
5, Paris.

., rue de Saintonge, 20, Paris.  
ib. Poissonnière, 98, Paris.  
urs d'Alsace-Lorraine, 114, Bor-

s, rue Oudinot, 23, Paris.  
cours des Petites-Ecuries, 8, Paris.  
nélius, rue Le-Peletier, 23, Paris.  
Porte-Saint-Georges, 31, Anvers,

hé aux œufs, 12, Bruges, Belgique.  
des Petits-Champs, 47, Paris.

**Électriques de niveau d'eau.**

*rical Water Level Indicators.*

de Tivoli, 5, Paris.

**inieurs Electriciens.**

*—Electrical Engineers.*

rue Lafayette, 189, Paris.  
., Baron d'., boul. Malesherbes,

dovic Charles Adrian Joseph, Cte.  
venue Montespan, 6, Passy, Paris.  
ie d'Enghien, 37, Paris.  
e de Naples, 4, Paris.  
de, rue Ampère, 54, Paris.  
des Poissonniers, 58, Paris.  
estre, rue Curial, 82, Paris.  
st François, rue Fromentin, 9,

**Ingénieurs Electriciens—continué.**

Bardon, L., boul. National, 63, Clichy, Paris.  
Baron, J., rue Fondaudège, 85, Bordeaux.  
Beaufils, Contrôleur des Télégraphes, Paris.  
Bergon, O., rue de Madame, 56, Paris.  
Berjot, A., rue Gay-Lussac, 48, Paris.  
Bernard, Julien, rue de l'Echiquier, 8, Paris.  
Berthon, L. A., boul. de Strasbourg, 56, Paris.  
Bizot, J., Aix-en-Provence.  
Blondot, Aug., rue du Monthabor, 38, Paris.  
Boistel, Georges, rue Picot, 8, Paris.  
Bonfante et Maisonneure, rue Grenet, 3, Nantes,  
Borrel Louis, rue Carnot, 6, Paris.  
Borrell, A. P., rue des Petits-champs, 47, Paris.  
Bouchaert et Cie., rue Verte, Bruxelles.  
Bourseul, Charles, Cahors.  
Braamm, John de, rue des Mathurins, 3, Paris.  
Brochard, Félix, rue Condorcet, 48, Paris.  
Buchin, A., rue Rolland, 11, Bordeaux.  
Cabanellas, Gust., rue Bernouilli, 11, Paris.  
Cacheleux, Alexis Firmin, Tribunal de Commerce,  
Paris.  
Carême, Félix et Houzeau Louis, rue de Grenelle,  
103, Paris.  
Carré, F., rue de Reuilly, 48, Paris.  
Casalonga, D. A., rue des Halles, 15, Paris.  
Chambrier, A., Charleville, Ardennes.  
Chameroy, Hipp. Maisons-Lafitte, Seine-et-Oise.  
Champoullion, A., avenue Gourgaud, 81, Paris.  
Chandeu, rue Brochant, 12, Paris.  
Changy, C. de, rue des Arts, 29, Levallois-  
Perret, Paris.  
Charrière, et Cie., Allevard, Isère  
Chassan, Paris.  
Chenot aîné, rue David, 10, Paris.  
Cherrill, Nelson, rue Daumesnil, 32, Paris.  
Chertemps, Alex., pass. St. Sébastien, 11, Paris.  
Chrétien, J., rue de Monceau, 87, Paris.  
Clerc, L., avenue Wagram, 42, Paris.  
Closset, Emil, boul. du Hainault, 157, Bruxelles.  
Cormillot, rue Vandal, 10, Paris  
Courtenay, L. W., rue Cambon, 45, Paris.  
Davillé, Luçon, Vendée  
De Bar, rue Nationale, 231, Lille.  
Delahaye, G., rue Drouot, 15, Paris.  
Delaporte, G., rue des Bourdonnais, 33, Paris.  
Delattre, A., rue Saint Georges, 20, Paris.  
Deprez, Marcelo, avenue de Wagram, 42, Paris.  
D'Hamelincourt, rue Saussure, 71 et 73, Paris.  
Digeon, J., rue de Lancry, 56, Paris.  
Ducousso Frères, rue Vanneau, 82, Paris.  
Dupont, boul. de la Seine, Bruxelles.  
Estienne, Edouard, rue Nollet, 17, Paris.  
Félix, C., rue St. Lazare, 28, Sermaize, Paris.  
Fernique, rue de Fleurus, 31, Paris.  
Fichet, P. A., rue des Martyrs, 19, Paris.  
Frayssinier, boul. Sébastopol, 97, Paris.  
Gadot, Paul, rue de Montreuil, 82, Paris.  
Gaiffe, L. D., rue St. André des Arts, 40, Paris.  
Gaillet et Huet. place Richell, 7, Lille.  
Gerald, F., Paris.  
Gérard A., Passage Cottin, 8, Paris.  
Geyter, G. de, Mouscron, Belgique.  
Gottendorf, Sylv., rue de Clichy, 39, Paris.  
Gramme, Zen, rue Oberkampf, 63, Paris.  
Gras, Jules, avenue de Lowendall, 5, Paris.  
Gray, Ch. Ham, Persan Beaumont, Paris.  
Grenet, rue de Chaillot, 5, Paris.  
Hardy, E., avenue de la Motte-Piquet, 6, Paris.  
Hedeman, G. de, avenue de Villiers, 97, Paris.  
Herz, Cornélius, rue du Faubourg Montmartre,  
10, Paris.  
Hospitalier, E., rue de Bellay, 6, Paris.  
Hurault, Louis, rue Cler, 29, Paris.  
Ivernois, G. d'. rue d'Anjou St. Honoré, 4,  
Paris.



## Ingénieurs Électriciens—*continué.*

Jablokoff, rue de Naples, 52, Paris.  
 Jacquez, Ernest, rue Bertrand, 26, Paris.  
 Jarnant, Bas, rue Pierre-Charron, 25, Paris.  
 Jaspard, rue Joffroy-Lange, Belgique.  
 Jodary, C., rue Montagne, 25, Paris.  
 Jousset, P., Paris.  
 Kabath, N. de, rue Fortuny, 15, Paris.  
 Lacombe, G., rue Bourgogne, 41, Lille.  
 Laing, W., boul. d'Hafer, 217, Paris.  
 Lascelles, Ant., rue des Rosiers, 42, Paris.  
 Lemnier, P., avenue de Suffren, 26, Paris.  
 Lepaute, Henry, rue Lafayette, 6, Paris.  
 Labin, François, rue des Champs, 86, Gand, Belgique.  
 Liepmann, Henri, rue Monthyon, 11, Paris.  
 Liepmann, Henri, Société French Electrical Power, avenue de l'Opéra, Paris.  
 Lipman, C., Paris.  
 Lousseau, rue Fontaine-au-Roi, 57, Paris.  
 Loutin, P., Paris.  
 Manche, L. et Cie., Louis le Grand, 3, Paris.  
 Mardot, Eugène, rue Bertrand, 24, Paris.  
 Maréchal, Paul, rue Joubert, 5, Paris.  
 Menier, Henri, rue d'Enghien, 6, Paris.  
 Mercadier, L., rue Descartes, 21, Paris.  
 Mérens, de, rue Bersault, 44, Paris.  
 Meyer, B., boul. St Denis, 1, Paris.  
 Milde, Ch., rue Langier, 26, Paris.  
 Minart, rue Neuve, 7, Amiens.  
 Moncel, Cie Th. du, rue de Hambourg, 7, Paris.  
 Monier, D., rue Pigalle, 57, Paris.  
 Moss, L., rue Saint Martin, 4, Paris.  
 Moser, James, rue Lord-Byron, 16, Paris.  
 Parent, G., rue de Bellevue, 19, Paris.  
 Plante, Guston, rue des Tournelles, 56, Paris.  
 Postel-Vinay, rue Vaneau, 58, Paris.  
 Puyat, de M. A. Messrs Jaspard & Co, Liège.  
 Rau, boul. Bischoffshausen, Bruxelles.  
 Ravera, Paul, boul. des Batignolles, 11, Paris.  
 Raymon, L., rue de Mauberge, 23, Paris.  
 Reymer, Em., rue Bonaparte, 5, Paris.  
 Richer, et Cie., rue du Pont Neuf, Bruxelles.  
 Roosaelt, Cornelius, rue le Peletier, 23, Paris.  
 Sarcia, Jules, rue de Tocqueville, 9, Paris.  
 Scrivinson, Grég., rue Vignon, 32, Paris.  
 Seligmann I<sup>er</sup>, rue Denfert-Rochereau, 23, Paris.  
 Serrin, Victor, boul. St. Martin, 1, Paris.  
 Siemens, W., rue Picot, 8, Paris.  
 Solignac, rue St. Maurice, 298, Paris.  
 Tessier, Jules, rue du Theatre, 7, Paris.  
 Tissandier, G., avenue de l'Opéra, 19, Paris.  
 Treuve, Gust., rue Vivienne, 14, Paris.  
 Vallot fils, rue d'Artois, 15, St. Etienne.  
 Valljos, H., Lieut-Colonel, rue du Faubourg Saint-Honore, 1, Paris.  
 Van Helle, rue Charles d'Anvers, Bruxelles.  
 Voghels, C., rue des Petres, 87, Bruges.  
 Walcker, rue Rochefort, 42, Paris.

## Ingénieurs Téléphoniques.

*E.—Telephone Engineers.*

*G.—*

Manche, L. et Cie., rue Louis-le-Grand 3, Paris.  
*For index des annonces.*

## Instruments de Musique Electriques.

*E.—Electrical Music Instruments*

*G.—*

Baudet, Cyrille, rue Lavoisier, 20, Paris.  
 Girard, Fr., rue des Batignolles, 80, Paris.  
 Kautner, F. et V., rue de Chehy, 45, Paris.

## Instruments de Précision.

*E.—Scientific Measuring Instruments*

*G.—Wissenschaftliche Mess-Instrumente*

Andrieux, G., rue Campagne Promenade, 5.  
 Armengaud aîné, rue Saint-Sébastien, 45.  
 Bissen, E., boul. Boudon, 35, Paris.  
 Bertel, A. P., rue des Petits-Champs, Paris.  
 Bourdine, avenue de la République, 13, Paris.  
 Bréguet, quai de l'Horloge, 39, Paris.  
 Canez, Al., rue Solane, 28, Paris.  
 Carpentier et Bianchi, rue Champollion, Paris.  
 Casse, A., rue Thérigny, 18 et 20, Paris.  
 Chamblrier, A., Charleville, Ardennes.  
 Charles, rue des Rosiers, 42, Paris.  
 Charrier et Cie, Allevard, Isère.  
 Collin, A., rue Montmartre, 118, Paris.  
 Croissant, place Denfert-Rochereau, 12, Paris.  
 Dalifol et Cie., quai Jemmapes, 172, Paris.  
 De la Roche, Ch., avenue Daumesnil, 30, Paris.  
 Delval J. A., rue des Fournelles, 42, Paris.  
 Deschamps, C. E., boul. Saint-Michel, 123, Paris.  
 Dienst, J., rue du Bac, 134, Paris.  
 Duboseq, J. et A., rue de l'Oratoire, 21, Paris.  
 Duchesne, rue Clapart, 25, Paris.  
 Dueret et Cie., rue Claude-Bernard, Paris.  
 Dumoulin-Froment, rue Notre-Dame-des-Orfèvres, 76, Paris.  
 Dupré, G., rue Campagne Promenade, 5, Paris.  
 Estienne, boul. de Valenciennes, 132, Paris.  
 Gaillet, L. A., rue Saint-Antoine, 60, Paris.  
 Girard, rue de Paris, 19, Cligny.  
 Grosjean, rue Neuve Saint-Merri, Paris.  
 Guérin, Em., rue Montmorency, 5, Paris.  
 Guichard, J. et Cie., rue de Rerroy, 8, Paris.  
 Hayet et Lignereux, avenue de la Motte-Picquet, Paris.  
 Henkel et Cie., quai des Grand-Augustins, Paris.  
 Hurlmann, passage Dauphine, Paris.  
 Jacquemont, Ramal, iv. de Neuilly, 122, Paris.  
 Jamin, L., rue Hauteville, 50, Paris.  
 Jenkins, C., rue du Cherche-Midi, 41, Paris.  
 Lattuada, quai d'Assommoir, 77, Villeneuve-Garenne.  
 Loguay, E., rue de la Tambe Imoite, 78, Paris.  
 Len-zewski, L. et Cie., rue de la Montagne-Sainte-Geneviève, 25, Paris.  
 Lepaute Henry fils, rue Lafayette, 6, Paris.  
 Le Roy, Ch., rue du Maine, 3, Paris.  
 Lousseau, A. B., rue Fontaine-au-Roi, 57, Paris.  
 Lazard, Leon, rue d'Artois, 21, Paris.  
 Mérens, A. de, rue Bonaparte, 11, Paris.  
 Milde, Ch. fils et Cie., rue Langier, 26, Paris.  
 Mori, C., boul. Richard-Lenoir, 39, Paris.  
 Nodot, J. B. V., rue Rempart de la Mitraille, 5, Paris.  
 Noël, C. P., rue Latournerie, 9, Paris.  
 Noël, V. A., rue St Denis, 163, Paris.  
 Regnard, rue Charlot, 28, Paris.  
 Renard et Cie., avenue Daumesnil, 122, Paris.  
 Roy, boul. St-Germain, 132, Paris.  
 Rühmkorf, rue Champollion, 19, Paris.  
 Schott, F., boul. de Courcelles, 17, Paris.  
 Seguy, V., Hect et Cie., rue Montmartre, 5, Paris.  
 Sire, rue St-Marguerite-St-Antoine, 12, Paris.  
 Tisserand, rue Vivienne, 14, Paris.  
 Vermeire, E., rue Mandar, 4, Paris.  
 Verdin, Ch., rue Out-le-Cœur, 11, Paris.



**ments pour la Physique et la  
Chimie.**

*B.—Scientific Instruments.*

*—Wissenschaftliche Instrumente.*

boul. du Temple, 33 et 35, Paris.  
1, société anonyme de l', boul.  
ière, 21, Paris.  
, G., rue Campagne-Première, 5, Paris.  
1 générale des ouvriers en instruments  
e, rue Pierre-Levée, 9, Paris.  
iné, boul. Montparnasse, 81, Paris.  
upresseur, rue St. Honoré, 175, Paris.  
Fenestre, rue Curial, 82, Paris.  
y, rue Dauphine, 16, Paris.  
ls, quai de l'Horloge, 29, Paris.  
, et Cie., rue Notre-Dame-de-Naza-  
, Paris.  
t Billaudot, rue de la Sorbonne, 22,  
  
res, rue St. André-des-Arts, 43, Paris.  
rue de Reuilly, 48, Paris.  
rue Vieille-du-Temple, 83, Paris.  
rue d'Aboukir, 48, Paris.  
le docteur Arthur, galerie de Valois,  
ris.  
, boul. d'Enfer, 226, Paris.  
, L. de, rue de Bondy, 92, Paris.  
epage, rue du Faub. St. Martin, 59, et  
Strasbourg, 30, Paris.  
e, H., rue Gay-Lussac, 5, Paris.  
F., rue St. Séverin, 34, Paris.  
, Q., place Dauphine, 24, Paris.  
G., rue des Bourdonnais, 33, Paris.  
A., rue des Fourneaux, 42, Paris.  
rue de l'Ancienne-Comédie, 19 et 21,  
  
, rue des Petits-Hôtels, 20, Paris.  
oul. St. Germain, 94, Paris.  
lebrun, 30, Paris.  
A., rue Monsieur le-Prince, 18, Paris.  
et Bondier-Moret, rue des Franca-  
is, 41, Paris.  
, boul. d'Enfer, 232, Paris.  
, Simon, rue Turbigo, 87, Paris.  
rue des Grandes-degrès, Paris.  
A., rue de Bellechasse, 6, Paris.  
rt, boul. du Temple, 17, Paris.  
t Cie., rue de Rocroy, 8, Paris.  
lfred, rue des Francs-Bourgeois, 47,  
  
humann, rue Lancry, 39, Paris.  
., rue de l'Odéon, 21, Paris.  
., rue Boutebrie, 14, Paris.  
A., rue Coutures-St.-Gervais, 6, Paris.  
i et Cie., rue de la Montagne-Sainte-  
re, 25, Paris.  
. St. Germain, 82, Paris.  
ie des Archives, 22, Paris.  
ie du Château-d'Eau, 44, Paris.  
rue Laromicière, 64, Paris.  
, rue Debelleye, 19, Paris.  
Mayet, 20, Paris.  
ue des Quatre-Fils, 5, Paris.  
t fils, boul. des Filles-du-Calvaire, 15,  
  
., rue Benouville, 3, Paris.  
emonnier et Cie., avenue de Suffren,  
s.  
place du Pont-Neuf, 13, Paris.  
boul. St. Martin, 1, Paris.  
e., rue Esquermoise, 13, Lille.  
rue Vanneau, 38, Paris.  
., rue des Pierres, 87, Bruges.  
rue Gay-Lussac, 64, Paris.

**Inventeurs—Électriques.**

*E.—Inventors—Electrical.*

*G.—Bureau zur Ausnützung von Erfindungen.*

Maiche, L., et Cie., 3, rue Louis le Grand, Paris.  
*Voir index des annonces.*

**Isolateurs et Fournitures de Télé-  
graphie et Téléphones.**

*E.—Insulators and Telegraph Materials.*

*G.—Isolatoren-Fabrikanten.*

Bréguet, quai de l'Horloge, 39, Paris.  
De Fuisseaux, frères, Baudour, près Monts,  
Belgique.  
Frion et Thierré, rue du Roi-de-Sicile, 50, Paris.  
Hache et Pepin-Lehalleur, Vierzon, Cher.  
India Rubber, Gutta Percha & Telegraph Works  
Company, Limited, boul. Sébastopol, 97, Paris.  
Legras, Th., avenue de Paris, 81, Saint Denis,  
près Paris.  
Pavoux et Cie., rue Delaunoy, 14 et 16, Bruxelles.  
Picard, A., rue du Marais, 62, Paris.  
Postel-Vinay, A., rue Vanneau, 38, Paris.  
Preisch, boul. Richard Lenoir, 82, Paris.  
Vauzelle, J. B. F., et fils, rue St. Maur, 146,  
Paris.

**Ivoire Brut (marchands).**

*E.—Crude Ivory.*

*G.—*

Hérolde, R., rue du Château d'Eau, 8, Paris.  
Lerchenthal, Pl., rue de Montmorency, 16, Paris.  
Ries, B. M., rue Braque, 4, Paris.

**Jouets Électriques.**

*E.—Electrical Toys.*

*G.—Electrische Spielzeug.*

Beeg, Ch., rue Rochechouart, 45, Paris.  
Combettes, L. de, rue de Bondy, 92, Paris.  
Gast, Alf. Montenat, faub. du Temple, 51, Paris.  
Gorde, A., rue Pigalle, 24, Paris.  
Houlman frères, boul. du Temple, 45, Paris.  
Levasseur et Ouachée, rue de Rivoli, 154, Paris.  
Parent, Geo., rue Debelleye, 19, Paris.

**Laminoirs.**

*E.—Rolling Mills and Rolled Metal Manufacturers.*

*G.—Waltzwerke.*

Arthaud et La Selve, quai de l'Hôpital, 11, Lyon.  
Bachot, Grouard et Cie., rue Morand, 2 et 4,  
Paris.  
Booth, J., & Co., Shepcote-street, Birmingham,  
England, Telephone No. 311. *Voir index des  
annonces Britanniques.*  
Decaux et fils, rue Turbigo, 42, Paris.  
Dronier, P., et Cie., rue des Fêtes, 63, Belleville,  
Paris.  
Griset et Schmidt, rue Oberkampf, 123, Paris.  
Guitton, quai de Jemmapes, 38, Paris.  
Lambert, S., rue Volta, 33, Paris.  
Masson, F., rue de Châlon, 38, Paris.  
Oeschger, Mesdach et Cie., rue St. Paul, 28, Paris.  
Pirot, A., rue de Montmorency, 14, Paris.  
Schmidt, rue Popincourt, 39, Paris.  
Société Parisienne de Fonderie et Laminage, rue  
du Chemin Vert, 11, Paris.

**Lampes Électriques et Régulateurs**  
(constr. de.)

### *E.—Electric Lamps and Regulators.*

*G — Electriche Lampen.*

Albaret, A. O., passage du Désir, 2 et 4, Paris.  
 Arnould, L., rue d'Enghien, 77, Paris.  
 Ateliers, Cance, boul. Voltaire, 207, Paris.  
 Avouon et Clement, boul. Voltaire, 56, Paris.  
 Baillache, E. de, rue Ampère, 64, Paris.  
 Baudet, Cloris, rue Saint Victor, 30, Paris.  
 Bourdin, C., av. de la République, 13, Paris.  
 Bregmet, quai de l'Herbage, 39, Paris.  
 Cance, Alexis, rue Sedaine, 28, Paris.  
 Carré, Ferd., rue de Reuilly, 48, Paris.  
 Changy, Ch. de., rue des Arts, 29, Levallois  
 Perret, Paris.  
 Chertemps, A. D., passage St. Sébastien, 11,  
 Paris.  
 Clerc, L., av. Wagram, 42, Paris.  
 Compagnie Belge et Hollandaise d'électricité, rue  
 Royale, 80, Bruxelles.  
 Compagnie Continentale Edison, av. de l'Opéra,  
 33, Paris.  
 Compagnie électrique, rue d'Argenteuil, 19, Paris.  
 Compagnie Française d'électricité (lampe Mondos),  
 boul. Eugène, 47, Neuilly.  
 Compagnie gén. Belge de lumière électrique,  
 rue de France, 18, Bruxelles.  
 Compagnie Parisienne d'éclairage par l'électricité,  
 rue Dufresnoy, 26, Paris.  
 De la Roche, Charles Ferdinand, rue Gaston de  
 St. Paul, 6, Paris.  
 Delaye, V., rue Ordener, 162, Paris.  
 Deerpelles, av. Percier, 8, bis, Paris.  
 Dubas, Ch., av. de la Motte-Piquet, 41, Paris.  
 Duboseq, père et fils (lampe Dr. Regnard), rue  
 des Fossés Saint Jacques, 11, Paris.  
 Duboseq, Jules et A., rue Monsieur le Prince, 30,  
 Paris.  
 Gaulard, F., rue Nollet, 65, Paris.  
 Gérard, A., soc. an. d'électricité, passage Cottin,  
 8, Paris.  
 Gérard, A., place St. Lambert, 5, Liège, Belgique.  
 Girard F. et Cie., boul. Henry IV., 44, Paris.  
 Giraud, rue de Paris, 19, Chilly.  
 Herz Cornélius, rue faub. Montmartre, 10, Paris.  
 Jarrant et Magne, rue Pierre-Charbon, 25, Paris.  
 Jaspas, J., rue Jousfasse, 12, Liège, Belgique.  
 Lampe Maxim de Kabath, rept., rue Fortuny,  
 15, Paris.  
 Lampe Nothomb (Mourlon et Cie.), Bruxelles.  
 Lampe Soleil (syndicat franc., de la), av. de  
 Wagram, 42, Paris.  
 Lampe Swan (G. Simon, représ.), rue Charlot,  
 85, Paris.  
 Lencowski et Cie., rue Montagne-Ste.-Geneviève,  
 26, Paris.  
 Maiche, L., et Cie., soc. de l'électrophone, rue  
 Louis le Grand, 3, Paris. Voir index des  
 annonces.  
 Méritens, E. de, rue Boursault, 44, Paris.  
 Michaels, J. P., av. de l'Opéra, 45, Paris.  
 Mille, Ch., et Cie., av. Langier, 20, Paris.  
 Mora, boul. Richard Lenoir, 93, Paris.  
 Mora, L., rue Saint Martin, 4, bis, Paris.  
 Postal-Vinay, rue Vanneau, 38, Paris.  
 Pilleux et Quenot, a l'Italienne, près Beauvais  
 (Oise).  
 Puivilland frères, rue Quinpot, 23, Paris.  
 Regnard, rue Charlot, 28, Paris.  
 Revoir, E., rue Bernouille, 3, Paris.  
 Sautter L. Lomenner et Cie., av. de Suffren,  
 Paris.  
 Sortin, V., boul. Saint Martin, 1, Paris.

**Lampes Électriques et Régulateurs**  
constr. de. — continuer

Siemens frères, rue Piroet, 8, Paris  
Société Anon. de Lignes Electriques Lignes  
Co., rue Saint Anne, 9, Paris.  
Société de constructions mécaniques et  
électriques, rue St Florentin, 11, Paris  
Société l'Eclairage Electrique, système  
lochkoff, Juran, Werdhmann, Mal  
Le Carbe, 250, Paris  
Société électrique Edison, av. de l'Opéra, 2  
Société Française d'électricité, F Girard  
boul. Henry IV, 44, Paris  
Société Lyonnaise de construct. mécan.  
d'éclairage électrique système Brush  
saunt-Loutin, rue de Grammont, 19, P  
Société universelle d'électricité, Tonn  
de Courcelles, 118, Paris  
Solignac et Cie rue Saint Maur, 208, Pa  
Somzee, L., rue Royale, 217, Bruxelles  
Suisse, F rue des Grands Augustins, 23  
Thiers, Rod, rue Claude Bernard, 91, Pa  
Trouillet, boul. Sebastopol, 112, Paris.

**Lumière Electrique.**

*E. Arctic Light*

*G. - Pleurosticta Lucida*

Albaret, A., Liancourt-Oise  
 Arnould L., rue d'Enghien 77, Paris.  
 Baillouet H. E. de, rue Ampère, 64 Paris  
 Ballat, rue St Fargeau 3, Paris  
 Barcellos, O. de, boul. Richard-Lenoir, 11  
 Barbedienne, F., faub. Poissonnière, 30,  
 Bernard, J., rue de l'Alouette, Paris  
 Baudet, Charles, rue St Victor, 90 Paris  
 Beau et Bertrand-Taillat, rue St Denis  
 Paris.  
 Biloret et Mora, boul. Richard-Lenoir, 11  
 Blouzon, E., rue Notre-Dame-de-Namur  
 Paris.  
 Bourdin, C., avenue de la République, 11  
 Bréquet, quat. de l'Horloge 32, Paris.  
 Cance A., rue Sedaine 28, Paris  
 Carré, E., rue de l'Estropade, 19, et  
 Irlandais, 4, Paris.  
 Carré J., rue de Reuilly, 48, Paris  
 Chertemps, A., passage St Sébastien,  
 Paris.  
 Chollat et Rézard, rue Bell. Cordière, 11  
 Clémanson, rue Lamartine, 23, Paris  
 Clémentel L., rue Brochant 18, Paris.  
 Cie l'Eclairage Electrique, rue Lecon  
 Paris.  
 Cie Française d'Electricité Lange  
 Eugène, 47, Neuilly, Seine  
 Cie Industrielle et Commerciale d'Elect  
 d'Opera, 11, Avenue de l'Opera Paris.  
 Cie Parisienne d'Eclairage par l'Electri  
 Dufresnoy 20 Paris.  
 Courtot, C., rue Chaudron 7 Paris  
 Danligny, place de la Chapelle 10 Paris  
 Deland et Law, quat. Louis XVII 6 Paris  
 Delaunay, P. P., rue d'Alger 1 Paris  
 Delaporte G., rue des Bourdonnais 33,  
 Delattre E., rue Daguerre 77 Paris.  
 Desruelles L., avenue Parmentier 8 bis, Paris  
 Duboucq J., rue d'Orléans 21 Paris  
 Duboucq Jules, rue Monsieur le Prince, 2  
 Duchesne Ernest 4 boulevard Arago O  
 Ducommun, boul. Magenta 18 Paris  
 Ducretet F., 100 rue de la Harpe, Paris  
 Fabien, avenue de l'Opera 3 Paris  
 Fagnon A., rue de Seine 7, Paris  
 French Electric Power Storage Co., 20  
 l'Opera, 5, Paris.

**Electricité—continué.**

., rue Lafayette, 115, Paris.  
 ie Nollet, 65, Paris.  
 rue des Rigoles, 71, et rue de  
 50, Paris.  
 usage Cottin, 8, Paris.  
 enue d'Eylau, 172, Paris.  
 ue Lafayette, 221, Paris.  
 n, rue St. Maur, 54, Paris.  
 ierre-Charron, 25, Paris.  
 rue Bédidor, 10, Paris.  
 lectrique Société Anonyme au  
 50,000 francs, rue Lecourbe, 250,

Odéon, 21, Paris.  
 uhét, avenue Marceau, 68, Paris.  
 rue Montagne-Stc.-Geneviève, 25.

ie Lafayette, 6, Paris.  
 Margfroy, 7, Paris.  
 de Londres, 6, Paris.  
 ie de l'Opéra, 45, Paris.  
 rt, boul. Voltaire, 137, Paris.  
 ceau, 3, Paris.  
 Château-d'Eau, 44, Paris.  
 artin, 4 bis., Paris.  
 du faub. Poissonnière, 98, Paris.  
 aradis Poissonnière, 47, Paris.  
 Cadet, 27, 29 et 31, Paris.  
 ue Vanneau, 38, Paris.  
 , rue Oudinot, 23, Paris.  
 N. D. de-Nazareth, Paris.  
 de Turenne, 116, Paris.  
 arlot, 28, Paris.  
 Benouville, 3, Paris.  
 . St Martin, 1, Paris.  
 rue Picot, 8, Paris.  
 ie d'électricité (Lampe Gérard),  
 1, 8, Paris.  
 ie des ateliers de constructions  
 t d'appareils électriques, boul.  
 Paris.  
 e des hauts-fourneaux, et fon-  
 l'Osne, boul. Voltaire, 58, Paris.  
 ines magnétoélectriques Gramme,  
 5, Paris.  
 e Edison, avenue de l'Opéra, 33,

ce et la lumière" avenue de  
 ris.  
 se de constructions mécaniques  
 électrique, rue de Grammont, 19,  
 fren, 40, Paris.  
 ie de fonderie et laminage, rue  
 rt, 11, Paris.  
 lle d'électricité Tommassi, rue  
 11, Paris.  
 rue St. Maur, 208, Paris.  
 es Grands-Augustins, 23, Paris.  
 ce de la Bourse, 31, Paris.  
 is de la Lampe Soleil, avenue de  
 Paris.  
 xtric Light Co., Limited (Nelson  
 recteur), usine, rue des Sarrazins,  
 les Fouillantines, 91, Paris.  
 ul. Sébastopol, 112, Paris.

**ines Électriques.**

—*Electrical Machines.*

—  
 ., 3, Rue Louis le Grand, Paris.  
 annonces.

**Machines Magnéto-Électriques et  
 Dynamo-Électriques.**

*E.—Dynamo and Magneto Electric Machines.*

*G.—Dynamo-Maschinen.*

Agence Générale d'Électricité (Louis Liepmann,  
 directeur), passage des Panoramas, galerie des  
 Variétés, Paris.  
 Ateliers, Cance, boul. Voltaire, 207, Paris.  
 Baudet, Cloris, rue St. Victor, 90, Paris.  
 Boez, Ch., rue Rochechouart, 45, Paris.  
 Bigeon, rue de la Tombe-Issoire, 73, Paris.  
 Biloret et Mora, boul. Richard-Lenoir, 93 et 95,  
 Paris.  
 Bonnet, G., boul. Filles-du-Calvaire, 5, Paris.  
 Bourdin, C., avenue de la République, 13, Paris.  
 Bréguet, quai de l'Horloge, 39, Paris.  
 Cance, A., rue Sedaine, 28, Paris.  
 Carpentier, et Bianchi, successeurs de Ruhmkorff,  
 rue Champollion, 15, Paris.  
 Carré, Edmond, rue de l'Estrapade, 49, et rue  
 des Irlandais, 4, Paris.  
 Carré, Ferdinand, rue de Reuilly, 48, Paris.  
 Chameroy, H., Maisons-Lafitte, Seine et Oise.  
 Chertemps, passage Saint-Sébastien, 11, Paris.  
 Com. Continentale Edison, avenue de l'Opéra,  
 33, Paris.  
 Com. Parisienne d'éclairage par l'électricité, rue  
 Dufresnoy, 25, Paris.  
 Com. universelle d'électricité Tommassi, boul. de  
 Courcelles, 118, Paris.  
 Courtot, rue Caumartin, 75, Paris.  
 Deffez, L. Fr., rue Saint-Séverin, 34, Paris.  
 Delaurier, E., rue Daguerre, 77, Paris.  
 Dubos, C., avenue de la Motte-Piquet, 41, Paris.  
 Ducrotet, E., et Cie., rue Claude-Bernard, 75,  
 Paris.  
 Estéve, A., à la Réole, Gironde.  
 Faure Electric Accumulator Co., avenue de  
 l'Opéra, 5, Paris.  
 French electrical power storage Co., avenue de  
 l'Opéra, 5, Paris.  
 Gaiffe, L. A., rue St. André-des-Arts, 40, Paris.  
 Gérard, A., passage Cottin, 8, Paris.  
 Géraud, F., rue de Paris, 19, Clichy.  
 Geyter, G. de Mouscron, Belgique.  
 Gotendorf, Silvanus N., 166, quai Jemmapls,  
 Paris.  
 Gire, E., rue de la Gaîté, 4, Paris.  
 Hardy (Hayet et Lignereux succ.), avenue de la  
 Motte-Piquet, 6, Paris.  
 Hultz, Alph., rue Danville, 18, Paris.  
 Humboldt, P. Césaire, rue Saint Charles, 77,  
 (Grenelle), Paris.  
 India rubber, gutta percha & tel. works Co.,  
 boul. Sébastopol, 97, Paris.  
 Jarriant et Magne, rue Pierre-Charron, 25, Paris.  
 Jaspar, Jos., rue Joufosse, 12, Liège, Belgique.  
 Lampe-Soleil. (syndicat français de la), avenue  
 de Wagram, 42, Paris.  
 Legras, Gr. Th., avenue de Paris, 81, St.  
 Denis (Seine).  
 L'Eclairage électrique Société Anonyme au  
 capital 6,550,000 francs, rue Lecourbo, 250,  
 Paris.  
 Leuzard, Léon, rue d'Arcole, 21, Paris.  
 Méritens, E. do, rue Boursault, 44, Paris.  
 Mignon et Rouart, boul. Voltaire, 137, Paris.  
 Mildé fils et Cie., rue Langier, 26, Paris.  
 Mora, C., boul. Richard-Lenoir, 93, Paris.  
 Pezzer, Dr. de, rue Sainte-Anne, 65.  
 Pilleux et Quesnot, Italienne, près Beauvais,  
 Oise.  
 Radiguet et fils, boul. des Filles-du-Calvaire, 15,  
 Paris.

## Machines Magneto-Electriques et Dynamo-Electriques—*continué.*

Sautter, Lemonnier et Cie., avenue de Suffren, 26, Paris.  
Siemens frères, rue Picot, 8, Paris.  
Société Gramme, rue Drouot, 15, Paris.  
Société Lyonnaise de constructions mécaniques et de lumière électrique, rue de Grammont, 19, Paris.  
Salignac et Cie., rue Saint-Maur, 208, Paris.  
Trouvé, G., rue Vivienne, 14, Paris.

## Machines pour Essayer les Câbles.

*E.—Cable Testing Machines.*

*G.—*

Chauvin et Marin-Darbol, rue du Banquier, 25, Paris.  
Société anonyme de câbles électriques, boul. Haussmann, 33, Paris.

## Machines à Vapeur.

*E.—Steam Engines.*

*G.—*

Boulet, J., et Cie., faub. Poissonnière, 144, Paris.  
Collet et Cie., rue de Grammont, 20, Paris.  
Farcot, Joseph, St. Ouen, Paris.  
Julien, S., et Cie., boul. de la Villette, 153, Paris.  
Muller, Ph., et Roux, Ch., rue Amelot, 138, Paris.  
Olry et Granddemange, rue St. Maur 83, Paris.  
Pilter, Th., rue Alibert, 24, Paris.  
Rickers, St. Denis, Seine.  
Siemens frères, rue Picot, 8, Paris.  
Société Centrale de constr. de Machines, route d'Aubervilliers, 50, Pantin.  
Société de constr. Mécan. d'Anzin établis. de Quillacq, Anzin, Nord.  
Taverdon, Al., rue de l'Arbalète, 36, Paris.  
Varal, Elwell et Middleton, avenue Trudaine, 1, Paris.

## Magnésium.

*E.—Magnesium.*

*G.—*

Delaporte, G., rue des Bourdonnais, 33, Paris.  
Godart et Contenau, rue du Bouloi, 7, Paris.

## Maillechort (Marchands de).

*E.—German Silver.*

*G.—*

Alaine, rue du Chemin-Vert, 26, Paris.  
Caillar, J. M., avenue Parmentier, 16, Paris.  
Desclères, rue des Marais, 66, Paris.  
Gombault et Cie., rue des Marais, 66, Paris.  
Lange, F. A., boul. Voltaire, 1, Paris.  
Muller, P., et Roux Ch., rue Amelot, 138, Paris.

## Manganèse.

*E.—Manganese.*

*G.—Braunstein.*

Billaudot, rue de la Sorbonne, 22, Paris.  
Compagnie des mines de manganèse de rue d'Alibert, 10, Paris.  
Delort, E., et Roucolle, Marché des Manteaux, 2, Paris.  
Hubner, A., rue Béranger, 3, Paris.  
Laurent, H., rue des Rosiers, 3 ter., Paris.  
Maguin, A., rue Alibert, 10, Paris.  
Monod et Voisin, rue des Ecoiffes, 25, Paris.  
Rambaud, L., rue Matignon, 34, Paris.  
Regnault, R., et Cie., avenue de P St. Denis.

## Matériel de lignes Télégraph.

*E.—General Suppliers of Telegraphic R.*

*G.—*

Aboilard, rue de Courcelles, 161, Paris.  
Barrière, L., et Cie., rue Saint Sabin, 2, Paris.  
Bigeon, rue de la Tombe-Issoire, 73, Paris.  
Bloch, Nathan, et Breger C., rue de l'17, Paris.  
Boivin, A. rue de l'Abbaye, 16, Paris.  
Bonis, Mme., rue Montmartre, 18, Paris.  
Borrel, rue des Petits-Champs, 47, Paris.  
Brasseur, L., et de Jaer., O., rue du Coi Bruxelles.  
Bréguet, quai de l'Horloge, 39, Paris.  
Breton frères, rue des Ecoles, 52, Paris.  
Carpentier, J. (ateliers Ruhmkorff), rue pollion, 15, et rue Delambre, 20, Paris.  
Casanova, J., rue Marcadet, 98, Paris.  
Chapart et Seng, Impasse Blottière, 3, Paris.  
Collin, rue Montmartre, 118, Paris.  
Crespin, Arthur, avenue Parmentier, 23, Paris.  
Debayeux, A., rue des Blancs Mante Paris.  
Degas, Ch., rue de Sèvres, 28, Paris.  
Deschiens, Eug., boul. St. Michel, 123, Paris.  
De Vos, Ch., rue des Croisades, 4, Bruxelles.  
Dignoy frères, rue des Poitevins, 4, 6 et Dorizon et fils, rue St. Sabin, 58, Paris.  
Douce et Cie., rue de Rivoli, 116, Paris.  
Ducretet, E., et Cie., rue Claude-Bern Paris.  
Dufort, H., rue St. Charles, 77, Paris.  
Dumoulin-Froment, rue Notre-Dame des 85, Paris.  
Esquerré-Cabalé, avenue des Champs Ely Paris.  
Etienne, boul. de Vaugirard, 132, Paris.  
Geoffroy, H., rue de l'Ermitage, 50, Paris.  
Germain, P., Clermont-Ferrand.  
Gloesener, D. A., avenue d'Avroy, Liège, Belgique.  
Gras, Jules, rue de Bellechasse, 41, Paris.  
Gressier, Ed., rue de Lyon, 3, Paris.  
Guggemos, Marices, rue St. Fuscien, 73, Paris.  
Joly, Alf., rue du Cherche-Midi, 19, Paris.  
Lapointe, G., rue St. Sébastien, 9, Paris.  
Lenczewski, Sad., et Cie., rue de la M St.-Geneviève, 25, Paris.  
Mildé, Ch., fils et Cie., rue Sangier, 26, Paris.  
Mora, C., Boul. Richard-Lenoir, 93, Paris.  
Mors, L., rue St. Martin, 4, bis., Grenelle, rue du Théâtre, 48, Paris.  
Netter, J., et Pilard, frères, rue de La N Paris.  
Riechez et Cie, rue d'Argent, 26, H Belgique.  
Sambourg, avenue de Neuilly, 31, à Neu Solignac et Cie., rue St. Maur, 208, Paris.  
Vauzelle et fils, rue St. Maur, 146, Paris.



**Mercure.**

*E.—Mercury.*

*G.—*

rue de la Sorbonne, 22, Paris.  
 , rue des Rosiers, 23, Paris.  
 rue Richard Lenoir, 38, Paris.  
 Ch., rue de Châteaudun, 51, Paris.  
 le, rue Chapon, 5, Paris.

**Mica (marchands).**

*E.—Mica Merchants.*

*G.—*

(ve.), Meuvres, Saône et Loire.  
 H., faub. St. Denis, Paris.

**Minium.**

*E.—Red Lead.*

*G.—*

, boul. du Temple, 50, et boul. Voltaire,  
 et Cie., boul. Magenta, 46 ; usines,  
 Landy, St. Denis, 4, Paris.  
 e.), Ecluses St. Martin, 27, Paris.  
 , boul. de la Villette, 117, Paris.  
 H., rue des Rosiers, 3 ter., Paris.  
 e.) et Cie., rue du Hautoir, Bordeaux.  
 , rue de la Chapelle, 46., Paris.  
 J. A., rue Lafayette, 85, Paris.  
 onyme des Mines et Fonderies de Pont-  
 rue de Châteaudun, 15, Paris.  
 A., rue Amelot 43 et 52, Paris.  
 J., rue de Canteleu, 8, et boul. Monte-  
 ille.

**Modèles (fab. de).**

*E.—Model Makers.*

*G.—Modelle-Fabr.*

J., rue Oberkampf, 75, Paris.  
 aug., avenue Parmentier, 107, Paris.  
 faub. St. Denis, 202, Paris.  
 ., rue de Lancry, 56, Paris.  
 ue du Chemin Vert, 121, Paris.  
 ue St. Maur, 73, Paris.  
 ., boul. St. Germain, 97, Paris.

**Moteurs Électriques.**

*E.—Electric Motors.*

*G.—Electrische-Motoren.*

Dance, boul. Voltaire, 207, Paris.  
 loris, rue St. Victor, 90, Paris.  
 ie de la Tombe-Issoire, 73, Paris.  
 ., boul. des Filles du Calvaire, 5, Paris.  
 avenue de la République, 13, Paris.  
 quai de l'Horloge, 39, Paris.  
 , Rue Sedaine, 28, Paris.  
 r, J. (ateliers Ruhmkorff), rue Cham-  
 15, et rue Delambre, 20, Paris.  
 J., rue de Monceau, 87, Paris.  
 L., place du Marché, Levallois-Perret,  
 r, G., rue de Menin, 25, Mouscron,  
 e.  
 E., rue Daguerre, 77, Paris.  
 , L., avenue Percier, 8, bis. Paris.  
 ., avenue de la Motte-Piquet, 41, Paris.  
 E., et Cie., rue Claude Bernard, 75,  
 -Froment, rue Notre-Dame des Champs,  
 s.

**Moteurs Électriques—continué.**

Estève, A., la Réole, Gironde.  
 Félix Ce., Sermaize, Marne.  
 Flogny, E. F. L., rue Lemercier, 81, Paris.  
 Gautier, P., Montfort l'Amaury, Seine et Oise.  
 Geneste, Herscher, et Cie, rue du Chemin-Vert, 42,  
 Paris.  
 Giesbers, J. M., rue de la Bonté, 5, Bruxelles.  
 Girard, A., pl. St. Lambert, 5, Liège, Belgique.  
 Gloesener, D. A., avenue d'Avroy, 70, bis Liège,  
 Belgique.  
 Greil, P. G., avenue Vieux Fort, à Vincennes.  
 Guichard, P., rue Lafayette, 221, Paris.  
 Herz, C., rue du Faub. Montmartre, 10, Paris.  
 Huët, Alph., rue Danville, 18, Paris.  
 Hurtu et Hautin, rue St. Maur, 54, Paris.  
 Journaux, J., rue des Cévennes, 56 ; rue du Bac,  
 37 ; et boul. Sébastopol, 84, Paris.  
 Larmanjat, J., rue Chauveau-Lagarde, 18, Paris.  
 Méritens, de, rue Boursault, 44, Paris.  
 Michaels, J. P., avenue de l'Opéra, 45, Paris.  
 Miguel, J., cours d'Alsace Lorraine, 110,  
 Bordeaux.  
 Moncomble, E., galerie Vivienne, 9, Paris.  
 Muller, E., rue d'Arenberg, 42, Bruxelles.  
 Puvilland frères, rue Oudinot, 23, Paris.  
 Regnard, rue Charlot, 28, Paris.  
 Sautter, Lemonnier et Cie., avenue de Suffren, 26,  
 Paris.  
 Siemens frères, rue Picot, 8, Paris.  
 Société Gramme, rue Drouot, 15, Paris.  
 Taverdon, A. L., rue de l'Arbalète, 36, Paris.  
 Tissandier, G., avenue de l'Opéra, 19, Paris.  
 Trouvé, G., rue Vivienne, 14, Paris.  
 Vanderbiste, E., rue de la Montagne, 68, Bruxelles.

**Moteurs à Gaz.**

*E.—Gas Motors.*

*G.—Gas-Motoren.*

Compagnie auxiliaire pour l'éclairage, chauffage,  
 et force motrice par le gaz, boul. Magenta, 38,  
 Paris.  
 Compagnie française de moteurs à gaz, avenue  
 de l'Opéra, 15, Paris.  
 Ivernois, Comte d', rue d'Anjou, St. Honoré,  
 4, Paris.  
 Laviorney, boul. de la Villette, 234, Paris.  
 Mignon et Rouart, boul. Voltaire, 137, Paris.  
 Seraine, J., rue Campagne-Première, 8, bis Paris.

**Nickel.**

*E.—Nickel.*

*G.—Nickel.*

Accault, A., boul. Diderot, 78, Paris.  
 Alaine A., rue du Chemin-Vert, 46, Paris.  
 Bauduin, C. (A. Delaherche succ.), cité Riverin, 7,  
 Paris.  
 Billault et Billaudot, rue de la Sorbonne, 22, Paris.  
 Bondoux, J., rue Vieille-du-Temple, 30, Paris.  
 Borzechi, A., boul. Magenta, 46, Paris.  
 Boulenger, A., rue du Vertbois, 4, Paris.  
 Cailar, J. M. et Cie., avenue Parmentier, 4, Paris.  
 Chailan, M. M. frères, le nickel systém Garnier  
 société anonyme, rue Montgrand, 45, Marseille.  
 Christoffe et Cie., rue de Bondy, 56, Paris.  
 Courty, rue du Temple, 114, Paris.  
 Délair, boul. Richard-Lenoir, 127, Paris.  
 Espinasse, E., rue St. Martin, 213, Paris.  
 Falcke et Cie., passage des Petites-Ecuries, 20,  
 Paris.  
 Folie et Denamur, quai Jemmapes, 82, Paris.  
 Folie, C., rue St. Maur, 204, Paris.  
 Hubner, A., rue Béranger, 3, Paris.

## Nickel—*continué.*

Le Nickel, rue de la Chaussée d'Antin, 38, Paris.  
 Lévy, Martin, et Plainchault, rue Pierre-Levé, 3, Paris.  
 Mines de Cobalt de l'Aragon, rue Caumartin, 28, Paris.  
 Mongenot, E., et Cie., rue Sedaine, 17, Paris.  
 Muller, P. et Roux, rue Amelot, 138, Paris.  
 Plazanet, de, rue Chapon, 5, Paris.  
 Rheims, J., rue du Parc-Royal, 16, Paris.  
 Sengel, E., rue Beautreillis, 22, Paris.  
 Seward, M. A. et Cie., le nickel, société anonyme, rue Vergniaud, 49, Bordeaux.  
 Société anonyme des mines et fonderies de Pontgibaud, rue Châteaudun, 15, Paris.

## Nickeleurs et Nickelure.

### E.—*Nickel Platers.*

### G.—

André, rue du Pont-au-Choux, 21, Paris.  
 Bauduin, C., cité Riverin, 7, Paris.  
 Beauferey, L., rue Charlot, 31, Paris.  
 Besançon, Ch. (Ducroux succ.), rue Chapon, 10, Paris.  
 Boudreaux, L. et fils, rue Monsieur-le-Prince, 27, Paris.  
 Boulenger, A., rue du Vertbois, 4, Paris.  
 Brisbarre, E., cour Trouillot, 14, Paris.  
 Couthier, rue Saintonge, 27, Paris.  
 Dechalotte, quai Jemmapes, 88, Paris.  
 Delahirsch, A., cité Riverin, 7, Paris.  
 Ducroux, rue Chapon, 4, Paris.  
 Dufoulon et Regnier, rue Portefoin, 2, Paris.  
 Folie et Denamur, quai Jemmapes, 82, Paris.  
 Folie, C., rue St. Maur, 204, Paris.  
 Gaiffe, L. A., rue St. André-des-Arts, 40, Paris.  
 Garnier, H., rue Morère, 15, bis., Paris.  
 Gaspard et Belle, rue de Saintonge, 62, Paris.  
 Gérard et Cie., rue Charlot, 62, Paris.  
 Girard, faub. St. Martin, 78, Paris.  
 Grand-Cyr, rue Portefoin, 9, Paris.  
 Grenet frères, rue du Temple, 114, Paris.  
 Hamlin, C., rue des Haudriettes, 5 bis., Paris.  
 Hauck, rue Lafayette, 220, Paris.  
 Huguenot, passage Ménilmontant, 3, Paris.  
 Lagriffoul, rue Charlot, 62, Paris.  
 Lainé, L., rue Chapon, 7, Paris.  
 Landry, rue Pastourelle, 5, Paris.  
 Laveur et Cie., rue de Nesles, 13, Paris.  
 Lemire et Degueldre, rue Charlot, 77, Paris.  
 Le Sueur, H., rue des Petites Ecuries, 32, Paris.  
 Lecroart, E., rue St. Maur, 60, Paris.  
 Maillé, avenue de la République, 7, Paris.  
 Mallié et Gérard, boul. Richard Lenoir, 136, Paris.  
 Maubert, rue Grange-aux-Belles, 35, Paris.  
 Ménagé, J., rue Gambey, 22, Paris.  
 Moitre, E., rue de Bondy, 80, Paris.  
 Moncomble, E., rue Vivienne, 9, Paris.  
 Mongenot, E. et Cie., rue Sedaine, 17, Paris.  
 Ory, A., rue des Vertus, 20, Paris.  
 Perille, J., avenue de Clichy, 98, Paris.  
 Pichou, A., rue Notre-Dame-de-Nazareth, 8, Paris.  
 Poirier, René, rue de la Roquette, 51, Paris.  
 Poirier, rue de l'Estrapade, 21.  
 Poulenc et Wittmann (Poulenc frères succ.) rue St. Merri, 7, Paris.  
 Société du familistère, représentée par A. Moret, faub. St Martin, 173, Paris.

## Outils pour Électriciens.

### E.—*Electricians' Tools.*

### G.—

Allaire, A., rue St. Martin, 227, Paris.  
 Arizoli, P., rue Pastourelle, 38, Paris.  
 Armengaud aîné, rue St. Sébastien, 45, Paris.  
 Aubout, L., rue Debelleye, 28, Paris.  
 Barignand et fils, rue Oberkampf, 127, Paris.  
 Bourgeois, rue Saint Martin, 10, Paris.  
 Cahen, Alb., boul. Saint Denis, 1, Paris.  
 Casalonga, D. A., rue des Halles, 15, Paris.  
 Clause, rue Denfert Rochereau, 20, Paris.  
 Corcellet, Bernard et Cie., pl. Bellocour, 15, Paris.  
 Courtoy, L., rue Saint Martin, 248, Paris.  
 Desnos, C., boul. Magenta, 11, Paris.  
 Ferron, Alex., rue des Gravilliers, 11, Paris.  
 Henry, Alb., rue de Montmorency, 86, Paris.  
 Lapipe, rue Oberkampf, 143, Paris.  
 Le Fournier et Maréchal, boul. Sébastien, Paris.  
 Mongin, Ed., rue Sedaine, 8, Paris.  
 Moynet et Cie., rue des Haudriettes, 4 et 6, Paris.  
 Pouillot fils, boul. Voltaire, 13, Paris.  
 Renard, rue de Gravilliers, 24, Paris.  
 Strube, H., rue Campagne-Première, 19, Paris.  
 Vautrin, J. E., rue du faub. Saint Martin, Paris.

## Papier Bande pour Télégraphes.

### E.—*Telegraph Paper.*

### G.—*Papier Fabriken für Telegraphen.*

Carson et Montgolfier, (société anonyme papeteries de Vidalon) Annonay, Ardèche.  
 Grivollet, E., boul. Beaumarchais, 38, Paris.

## Paratonnerres.

### E.—*Lightning Conductors.*

### G.—*Blitzableiter.*

Ancelot, Th., boul. Edgard Quinet, 18, Paris.  
 Beauvais, M. F., boul. St. André, 4, Paris.  
 Beignet, rue Montmartre, 96, Paris.  
 Bogey et Boige, avenue de Saxe, 216, Paris.  
 Boivin, A., rue de l'Abbaye, 16, Paris.  
 Borrel, rue des Petits-Champs, 47, Paris.  
 Buchin, Aug., rue Rolland, 11, Bordeaux.  
 Callaud, A., et fils, rue du Bocage, 267, Paris.  
 Cartier, Emile, rue Titon, 30, Paris.  
 Carue, rue St. Denis, 269, Paris.  
 Collin, Aron Fr., rue Montmartre, 118, Paris.  
 Deleuil, J. A., rue des Fourniaux, 42, Paris.  
 Desseux, rue Grande des Creuses, 8, St. Denis.  
 De Vos, Ch., rue des Croisades, 4, Bruxelles.  
 Douce et Cie., rue de Rivoli, 116, Paris.  
 Esquerré-Cabalé, avenue des Champs Élysées, Paris.  
 Fasse, J., rue de l'Hôtel de Ville, 12, Paris.  
 Fontenilles, V., boul. Hausmann, 38, Paris.  
 Gignou, E., rue St. Ferdinand des Ternes, Paris.  
 Gloesener, Ille. A., avenue d'Avory, Liège, Belgique.  
 Guérin, Ch. rue de Naples, 72, Paris.  
 Hayet et Lignereux, avenue La Motte-Picquet, Paris.  
 Jarriant et Magne, rue Pierre-Charron, 25, Paris.  
 Jaspard, J., rue Joffosse, 12, Liège, Belgique.  
 Lichtenfelder, G., avenue de la Grande Armée, Paris.  
 Magne, Ch., avenue du Trocadéro, 7, Paris.

**Verres—continué.**

de Bac, 49, Rouen.  
P., rue Lafon, 4, Marseille.  
, et Cie. (Soc.), rue de Monceau, 3, et  
gier, 26, Paris.  
.. Richard-Lenoir, 95, Paris.  
rue St. Martin, 4, bis. Paris.  
re et fils, cours. de la Liberté, 3, Lyon.  
aux Hamps, 6, Caen.  
, rue de la Barre, 14, Lyon.  
A. L., rue de Rome, 78, Paris.  
, de Bréa, 20, Paris.  
ace Lucas, Toulouse.  
faub. St. Martin, 41, et pass. de  
ie, 4, Paris.  
, Capdeville, 12, Bordeaux.  
lliam, rue de Vaugirard, Paris.  
, Fr., Chaussée d'Anvers, 78, Bruxelles.  
, E. (Maison Niot), rue Mandar, 10,  
O., rue de Rémouleurs, 11, Gand,  
.

**Phares (Construct. de).**

*E.—Lighthouse Engineers.*

*G.—Leuchthurm Ingenieure.*

Fenestre, rue Curial, Villette, 82,  
Michel, Phares de l'Empire Ottoman,  
iche, 32 et 34, Paris.  
parisienne d'éclairage par l'électricité,  
esnoy, 25, Paris.  
G., rue des Bourdonnais, 33, Paris.  
res, rue de la Douane, 24, et quai  
11, Paris.  
lenry, rue Lafayette, 6, Paris.  
le, rue Boursault, 44, Paris.  
emonnier et Cie., avenue de Suffren,  
.  
nyme d'électricité, A. Gérard, passage  
, Paris.

**phor Bronze (Marchands).**

*—Phosphor Bronze Merchants.*

*—Phosphor-Bronze.*

Henry, rue Laffitte, 10, Paris.  
ue de l'Ermitage, 50, Paris.  
Geor., quai Jemmapes, 152, Paris.  
rères, rue St. Maur, 86, Paris.

**ournées pour Appareils Élec-  
triques.**

*od Turners for Electric Appliances.*

rue Rochechouart, 46, Paris.  
fils, rue St. Sabin, 58, Allée Verte, 2,  
ue Sébastien, 9, Paris.  
la Pommeraye, avenue Parmentier,  
is.

**Piles Électriques.**

*E.—Electric Batteries.*

*G.—Electrische Batterien.*

Aunay, A d', cité Gaillard, 3, Paris.  
Ballat, rue St. Fargeau, 3, Paris.  
Barbier, C., rue des Quatre-Vents, 6, Paris.  
Barluet et Cie., rue du faub. Poissonnière, 61.  
Paris.  
Bassée-Crosse, rue de Bondy, 92, Paris.  
Baudet, Cloris, rue St. Victor, 90, Paris.  
Beaufils, M. F., boul. St. André, 4, Paris.  
Berrurier, père et fils, rue Caffarelli, 14, Paris.  
Billaudot, rue de la Sorbonne, 22, Paris.  
Biloret et Mora, boul. Richard-Lenoir, 93, Paris.  
Bizot, Jos., Aix-en-Provence.  
Blouzon, E., rue Notre-Dame-de-Nazareth, 30,  
Paris.  
Boivin, A., rue de l'Abbaye, 16, Paris.  
Bourdin, C., avenue de la République, 13, Paris.  
Braud, rue de la Madeleine, 32, Bruxelles.  
Bréguet, quai de l'Horloge, 39, Paris.  
Brewer frères, rue St. André-des-Arts, 43, Paris.  
Burrall, Ch., rue Larrey, Paris.  
Callaud, A., et fils., rue de Bocage, 26, Nantes.  
Carré, F., rue de Reuilly, 48, Paris.  
Chapuis, F., rue de Lourmel, 17, Paris.  
Combettes, L. de, rue de Bondy, 92, Paris.  
Cornette, rue Michel-Lecomte, 23, Paris.  
Delaporte, G., rue des Bourdonnais, 33, Paris.  
Delaurier, rue Daguerre, 77, Paris.  
Deleuil, rue des Fourneaux, 42, Paris.  
Deschiens, boul. St. Michel, 123, Paris.  
Desruelles, avenue Percier, 8 bis, Paris.  
De Vos, Ch., rue des Croisades, 4, Bruxelles.  
Belgique.  
Digney, frères, rue des Poitevins, 6 et 8, Paris.  
Douce et Cie., rue de Rivoli, 116, Paris.  
Dubos, avenue de la Motte-Piquet, 41, Paris.  
Duboscq, J. et A., rue de l'Odéon, 21, Paris.  
Duboscq, Jules, rue Monsieur-le-Prince, 30, Paris.  
Ducretet, E. et Cie., rue Claude-Bernard, 75.  
Paris.  
Engel, A., rue de Seine, 77, Paris.  
Estéve, A., à la Réole, Gironde.  
Féraud, V. M., rue d'Alésia, 121, Paris.  
Fontaine, rue Monsieur-le-Prince, 18, Paris.  
Frion et Thierré, rue du Roi-de-Sicile, 50, Paris.  
Gaiffe, L. A., rue St. André-des-Arts, 40, Paris.  
Gaulard, L., rue Nollet, 65, Paris.  
Giesber, rue de la Route, 5, Bruxelles.  
Girard, F., rue des Batignolles, 80, Paris.  
Gloesener, Dlle. A., avenue d'Avroy, 70,  
Bruxelles.  
Goderel, avenue d'Eylau, 172, Paris.  
Guérin, Ch., rue de Naples, 72, Paris.  
Guérin, E., rue Montmorency, 5, Paris.  
Guérot, rue Daguerre, 57, Paris.  
Hubin, G., rue de Turenne, 14, Paris.  
Jourdan, Ch., rue Thiers, 40, Marseille.  
Lallier, (Vve.) et Cie., rue de Buffon, 23, Paris.  
Laurent, rue de l'Odéon, 21, Paris.  
Leclanché, rue Fromentin, 9, Paris.  
Ligras, F. T., avenue de Paris, 81, St. Dennis.  
Létrange, L. et Cie., rue des Vieilles,  
Handriettes, 1, Paris.  
L'Hôte, A., rue Markfoy, 7, Paris.  
Loiseau, E., rue de Seine, 35, Paris.  
Luizard, L., rue d'Arcole, 21, Paris.  
Maiche, L., et Cie., rue Louis-le-Grand, 3, Paris.  
Mangenot, rue d'Ulm, 44, Paris.  
Mathieu, L. A., rue de Saintonge, 20, Paris.  
Michaels, J. P., avenue de l'Opera, 45, Paris.  
Mignot, L., place Lafayette, 109, Paris.  
Mors, L., rue St. Martin, 4, bis, Paris.

**Piles Électriques—continue.**

Mourlon, Ch. et Cie., rue de Ruysbroeck, 61, Bruxelles, Belgique  
 Noe, C. F., rue Laroque, 7, Paris  
 Pis, J., boul. de Belleville, 44, Paris  
 Planté, G., rue de Tournai, 56, Paris  
 Reynier, Emile, rue Benouville, 3, Paris  
 Sainte, A., rue du Château-d'En, 25, Paris  
 Samson, P., avenue Daumesnil, 49, Paris  
 Serrin, V., boul. St. Martin, 1, Paris  
 Simmen, A., rue Dombasle, 55, Paris  
 Société "La force et la lumière," avenue de l'Opéra, 5, Paris.  
 Société universelle d'électricité Tommasi, rue de Provence, 11, Paris.  
 Sonzee, L., rue Roy de, 217, Bruxelles  
 Strebet-Dorleans, Faub. du Temple, 106, Paris.  
 Thiers, Rod., rue Claude-Bernard, 91, Paris.  
 Tissanier, G., avenue de l'Opéra, 19, Paris  
 Tommasi, H., Fondettes, près Tours (Indre et Loire).  
 Trouvé, G., rue Vivienne, 14, Paris.  
 Vildie, J. et fils, Route de Flandres, 48, Pantin, Seine.  
 Warnon, V. J., rue de la Folie-Méricourt, 27, Paris.  
 Weill, M., boul. de Sébastopol, 131, Paris.

**Platine.**

*E.—Platinum dealers.*

*G.—Platinum—Handler.*

Chapuis, H., rue Grenéta, 36, Paris.  
 Chapuis, P., rue Marlar, 21, Paris  
 Desmoutis, H. P. et Le Bran et Cie., rue Montmartre, 56, Paris, et à Londres, 8, Southampton-street, Strand, W. C.  
 Elserlin, Ph., rue du Car, 43, Paris.  
 Faure et Kessler, Clermont-Ferrand.  
 Godart et Contreau, rue du Bouloi, 7, Paris.  
 Morin, Vve., rue Montmartre, 77, Paris.  
 Société Française d'oxydation et de platinage, rue des Petits-Champs, 76, Paris.

**Plomb Mines et Fonderies.**

*E.—Lead Mines and Works.*

*G.—Blei Werke und Schmelzer.*

Benoist, J., avenue d'Italie, 13, Paris.  
 Cheylus, P., faub. St. Antoine, 21, Paris.  
 Cie. Française des mines et usines d'Escombréra, rue Taillout, 37, Paris.  
 Cie. royale Asturienne, rue de Malte, 5, ter, Paris.  
 Dunon, A., faub. St. Martin, 33, Paris  
 Faure et Gauthier, J. B. fils, rue Girgouan, 65, Marseille  
 Franck, avenue de Versailles, 6, Paris  
 Huber, J., rue de Purenne, 14, Paris  
 Lavassière, J. J., rue de la Vierge, 58, Paris  
 Létrange, L. et Cie., rue des Harcelottes, 1, Paris  
 Sanchez Torres, F., rue Segnier, 5, Paris.  
 Société anonyme des mines et fonderies de Pontgibaud, rue de Châteaudun, 15, Paris.

**Poteaux Télégraphiques en fer.**

*E.—Iron Telegraph Poles.*

*G.—*

Bonheu père, rue de Nivern, 11, Paris  
 Fléchet, L. et Cie., rue Lacroix, Liège  
 Lichtenfeld, G., avenue de la Grande Armée, 45, Paris  
 Papan, boul. Montparnasse, 51, Paris  
 Vauclle et fils, rue St. Maur, 146, Paris.

**Resorts (fab. de).**

*E.—Spring Makers*

*G.—Sprungfede-Fabrikanten*

Sorgue, P., passage Corbion, 7, et Faub. Temple, 9, Paris. Ressorts à Bon platine argent et cuivre pour télégraphes électriques.

**Sociétés Savantes.**

*E.—Learned Societies*

*G.—Wissenschaftliche Vereine.*

Société des ingénieurs civils, cité Rougemont, Paris  
 Société des ingénieurs télégraphistes d'Alsace, rue de Naples, 4, Paris.  
 Société internationale des électriciens, Grenelle, 99, Paris

**Sonneries et Signaux Electriques.**

*E.—Electric Bells and Signals.*

*G.—Electrische Glocken.*

Aboillard, L., rue de Courcelles, 161, Paris  
 Barbier, E., rue Fremontin, 9, Paris  
 Baron, J., rue Fondandegre, 85, Toulouse.  
 Batail, B., Montet près Comans Garonne.  
 Beez, Ch., Richehouart, 45, Paris.  
 Beignot, rue Montmartre, 96, Paris  
 Biloret et Mora, boul. Richard-Lenoir, 90  
 Bogey et Bonge, avenue de Saxe, 24, Lyon  
 Boivin, Arsène, rue de l'Albay, 16, Paris  
 Bonis, Mme., rue Montmartre, 18, Paris.  
 Borrel, Arn.-ph., rue des Petits-Champs, Paris.  
 Bousin, A., rue Lafayette, 11, Paris.  
 Bourdy, F., boul. de Strasbourg, 38, Paris  
 Breguet, quai de l'Horloge, 30, Paris  
 Brewer frères, rue St. André-des-Arts, 44  
 Buchin, A., rue Roland, 11, Bordeaux.  
 Casanova, J., rue Miradet, 98, Paris  
 Castels, G., rue de la Madeleine, 51, Paris  
 Cazaux, rue Miradet, 86, Paris  
 Cazeaux, J., boul. de Nord, 38, Bordeaux  
 Charlin, Ch., rue de Valenciennes, Paris  
 Charvin, C., rue Coutin, 4, Bordeaux.  
 Chatelet, V., rue Nourse, 7, Amiens  
 Chaudron, Léon, boul. St. Germain, 250  
 Chollet et Bezan, rue Bell. ord. 16  
 Chose, Dr., rue de Paris, 157, les Laies, 2  
 Collin, rue Montmartre, 18, Paris  
 Combettes, L. L., rue de Bondy, 31, Paris  
 Corzellet Bernard et Cie., 11, Boulevard, 10  
 Cornette, rue Michel-le-Croisé, 7, Paris  
 Courtot, C., rue Camille, 75, Paris  
 Constant, Alex., rue St. Pierre, 52, Paris  
 Crosse, rue des Vosges, 3, Paris  
 De Bar, rue Nationale, 231, Paris  
 Deboyraux, A., rue des Blancs-Manteaux, Paris  
 Delamotte et Boyer, passage Marbeuf, 12, Marbeuf, 34, Paris  
 Deschamps, E., boul. St. M., 121, Paris  
 Desseaux, rue Grande-des-Croix, 8, St. M.  
 Digney frères, rue des Petits-Champs, 4, Paris  
 Dittmer, N., rue Poncelet, 38, Paris  
 Domet et Cie., rue de Valenciennes, 116, Paris.  
 Ducret, E., et Cie., rue Claude-Bernard, Paris  
 Esquerre, Cabale, avenue des Champs-Élysées, Paris.



**et Signaux Electriques—cont.**

boul. de Courcelles, 15, Paris.  
 V., boul. Haussmann, 38, Paris.  
 e de Thorigny, 11, Paris.  
 rue St. André-des-Arts, 40, Paris.  
 , rue Taitbout, 6 et 16, Paris.  
 , rue de Varennes, 64, Paris.  
 H., rue des Rigoles, 71, et rue de  
 re, 50, Paris.  
 , rue Rochechouart, 17, Paris.  
 rue de Paris, 19, Clichy.  
 eaux, Télégraphe, Grenoble.  
 Mayer, rue Turpin, 28, Lyon.  
 L., rue de Clignancourt, 22, Paris.  
 de la Roquette, 75, Paris.  
 ., rue de Naples, 72, Paris.  
 rue Montmorency, 5, Paris.  
 evos D., rue du Nord, 61, Bruxelles.  
 bourg, Alsace-Lorraine.  
 , rue de Chaillot, 20, Paris.  
 Confort, 14, Lyon.  
 er, Gutta Percha & Telegraph Works  
 ted, boul. de Sébastopol, 97, Paris.  
 t Gripouilleau, Tours.  
 Magne, rue Pierre-Charron, 25, Paris.  
 ne, rue Bélidor, 10, Paris.  
 Dulong, 29, Paris.  
 ., rue de la Cérisaie, 13, Montreuil.  
 , rue des Pêcheurs, Mézières.  
 , L. et Cie., rue de la Montagne-St.-  
 e, 25, Paris.  
 es, rue d'Arenberg, 36, Bruxelles.  
 Petitqueux, rue Bachelet, 21, Paris.  
 ... boul. d'Enfer. 101, Paris.  
 e Puebla, 28, Lille.  
 , avenue du Trocadéro, 7, Paris.  
 et Cie., rue Louis-le-Grand, 3, Paris.  
 de Bac, 47, Rouen.  
 s, Meyerbeer, 5, Paris.  
 ie Lafon, 4, Marseille.  
 ., rue Basse, 64, Lille.  
 Soc. Ch., et Cie., rue Langier, 26,  
  
 rue Neuve, 7, Amiens.  
 rue Galande, 57, Paris.  
 Collas, rue Myrrha, 87, Paris.  
 oul. Richard Lenoir, 93 et 95, Paris.  
 ie St. Martin, 4 bis Paris.  
 rue d'Arenberg, 42, Bruxelles.  
 rue de la Chaussée d'Antin, 64, Paris.  
 ps, rue aux Champs, 6, Caen.  
 ., fils, rue Bailly, 5, Paris.  
 . L., rue de Rome, 78, Paris.  
 et Thomas, A., rue Ravignan, 8, Paris.  
 boul. Malesherbes, 79, Paris.  
 e de la Perle, 24, Paris.  
 ., St. Quentin.  
 rue Frère Orban, 33, Bruxelles.  
 epinal.  
 ce Lucas, Toulouse.  
 ue Notre Dame, 50, bis. Lille.  
 sbourg, Alsace-Lorraine.  
 e., rue d'Argent, 26, Bruxelles.  
 rue Rochechouart, 35, Paris.  
 , avenue de la Gare, 14, Nice.  
 ue St. Laurent, 21, Paris.  
 ., Tournon, Ardèche.  
 et Lorel, E., Brest.  
 rue Capdeville, 12, Bordeaux.  
 Xavier Eugène, boul. St. Martin,  
  
 , rue Dombasle, 55, Paris.  
 omyne de l'Avertisseur Electro-  
 que, rue Scribe, Paris.  
 7, place Ducale, 20, Charleville.  
 ieans, faub. du Temple, 106, Paris.

**Sonneries et Signaux Electriques—cont.**

Taillefesse, A., rue Lafayette, 172, Paris.  
 Thevenon fils, rue de Rome, St. Etienne.  
 Vallot fils, rue d'Arcole, 13, St. Etienne.  
 Vanderbiste, Ed., rue de la Montagne, 68,  
 Bruxelles.  
 Van, Hulle F., chaussée d'anvers, 78, Bruxelles.  
 Vasseur, rue de Rumigny, 49, Amiens.  
 Vayet, rue Ferrandière, 22, Lyon.  
 Voghels, rue Marché aux Œufs, Bruxelles.  
 Walcker, W., et Cie., rue Rochechouart, 42, Paris.  
 Wandenberg, H., rue des Trois Bornes, 39, Paris.  
 Zion et Chollet, L., villa d'Orléans, 27, Mont-  
 rouge.

**Spécialités Électriques.**

*E.—Electric Specialities.*

*G.—*

Maiche, L. et Cie., rue Louis le Grand, 3, Paris.

**Sulfate de Cuvie.**

*E.—Sulphate of Copper.*

*G.—*

Lefebvre, Edouard, rue de la Cerisaie, 13, Paris.

**Tableaux indicateurs de Sonneries.**

*E.—Indicators for Electric Bells.*

*G.—*

Lefrey, E., boul. de Strasbourg, 185, Le Havre.  
 Crosse, rue des Vosges, 3, Paris  
 D'Argy, Paris.  
 Debayeux, A., rue des Blancs - Manteaux, 41,  
 Paris.  
 Douce, et Cie., rue de Rivoli, 116, Paris.  
 Guérin, rue de Montmorency, 5, Paris.  
 Mora, C., boul. Richard-Lenoir, 93, Paris.  
 Pelletier, A., rue de Rome, 78, Paris.  
 Sieur, Jules Xavier Eugène, boul. Saint Marcel,  
 38, Paris.

**Tachymètres.**

*E.—*

*G.—*

Buss, W. A., rue Desaix, 1, Paris.

**Télégraphes Portatifs.**

*E.—Portable Telegraphs.*

*G.—*

Gras, Jules, avenue de Lowendall, 8, Paris.  
 Rault, et Cassan, Paris.  
 Trouvé, G., rue Vivienne, 14, Paris.

**Télégraphie (Appareils et fournitures de)**

*E. Telegraph Apparatus.*

*G — Telegraphische Apparate.*

Arlincourt, I. d', avenue d'Exlan, 157, Paris.  
 Auboin, rue de la Roquette, 21, Paris.  
 Aylmer, J., rue de Naples, 4, Paris.  
 Baillache, E. L., rue Ampère, 54, Paris.  
 Barbier, rue des Quatre-Vents, 6, Paris.  
 Barbier, E., rue Fromentin, 9, Paris.  
 Barrière et Cie., rue St-Sabin, 22, Paris.  
 Bandot, J. M. E., rue d'Angirard, 181, Paris.  
 Bigeon, rue de la Tante-Issoire, 73, Paris.  
 Biloret et More, boul. Richard-Lenoir, 93, Paris.  
 Biron, E., rue St-Martin, 237, Paris.  
 Blanc, F., Grenoble.  
 Bloch, N., et C. Brager, rue de l'Entrepôt, 17, Paris.  
 Boivin, A., rue de l'Albaye, 16, Paris.  
 Bonis, Mme., rue Montmartre, 18, Paris.  
 Borrel, A. P., rue des Petits-Champs, 47, Paris.  
 Breguet, Quai de l'Horloge, 89, Paris.  
 Breton frères, rue des Écoles, 52, Paris.  
 Brewer frères, rue St. André-des-Arts, 43, Paris.  
 Cacheux, A. F., rue des Vieilles-Haudriettes, 6, Paris.  
 Carpentier, J., rue Champollion, 15, et rue Delambre, 20, Paris.  
 Casanova, J., rue Marcadet, 98, Paris.  
 Cazéus, H., rue de Miromesnil, 92, Paris.  
 Cérey, E., boul. de Strasbourg, 186, Le Havre.  
 Chambrier, E., Charleville, Ardennes.  
 Chamerois, H., Maisons-Laffitte, Seine-et-Oise.  
 Charrier et Cie., rue St-Ambroise, 25, Paris.  
 Chaudron, L., boul. St-Germain, 229, Paris.  
 Chellat et Rézard, rue Belle-Gardière, 10, Lyon.  
 Chuteaux, T., place du Marché, 1, Levallois-Perret.  
 Collin, A. F., rue Montmartre, 118, Paris.  
 Combettes, L. le, rue de Bondy, 92, Paris.  
 Courtot, C., rue Caumartin, 75, Paris.  
 Crossin, rue des Voies, 3, Paris.  
 Debeaux, A., rue des Blancs-Manteaux, 41, Paris.  
 Degus, Ch., rue de Sèvres, 28, Paris.  
 Delahaye, V., rue d'Aboukir, 3, Courbevoie.  
 Deschamps, E., boul. St-Michel, 123, Paris.  
 Desruelles et Bourdonde, avenue Parrot, 8 bis., Paris.  
 Digney frères, rue des Pottévins, 4, 6 et 8, Paris.  
 Dorizon et fils, rue St-Sabin, 58, Paris.  
 Douce et Cie., rue de Rivoli, 116, Paris.  
 Ducrotet, E. et Cie., rue Claude-Bernard, 76, Paris.  
 Dumoulin - Froment, rue Notre-Dame-des-Champs, 85, Paris.  
 Espérandieu-Cabot, avenue des Champs-Élysées, 28, Paris.  
 Estienne, boul. de Vaugirard, 132, Paris.  
 Felten et Gaudemann, représentés à Paris par Jacquot et Casson, rue des Bourdonnais, 30, Paris.  
 Fontaine-Fourmon, rue Grenier-St.-Lazare, 11, Paris.  
 Fontenilles, V., boul. Haussmann, 38, Paris.  
 Frion et Thierri, rue du Roi-des-Siècles, 50, Paris.  
 Gaille, L. A., rue St-André-des-Arts, 40, Paris.  
 Gaudet P. T., rue de Grenelle, 16, Paris.  
 Gaudier, E., rue de l'Université, 48, Paris.  
 Geoffroy, H., rue des Rigoles, 71, et rue de l'Épave, 50, Paris.  
 Germain, P., Clermont-Ferrand.  
 Goussier et Corat, succ., rue Michel-le-Comte, 23, Paris.  
 Gras, J., rue Belleshassé, 41, Paris.  
 Gressier, E., rue de Lyon, 3, Paris.

**Télégraphie Appareils et fournitures**

*—continue.*

Guérin, Ch., rue de Naples, 72, Paris.  
 Guérin, E., rue Montmartre, 5, Paris.  
 Guenet, rue Daguerre, 57, Paris.  
 Harly, Hayet et Lagnereux succ., avenue Motte-Piquet, 6, Paris.  
 Houzeau, L., rue Rousselle, 11, Paris.  
 Hequet, rue de Grenelle, 103, Paris.  
 India Rubber, Gutta Percha, and Telegraph Works Co., Limited, boul. de Sébastopol, Paris.  
 Jacquemier, R., avenue de Neuilly, 123, Paris.  
 Jamain, Paul et Cie., rue de Patrice, 10, Paris.  
 Jarrant, rue Pierre-Charbon, 25, Paris.  
 Jarrant jeune, rue Belidor, 10, Paris.  
 Joly, H., rue du Cherche-Midi, 12, Paris.  
 Jordevy, C., rue Montagne, 20, Paris.  
 Lapointe, G., rue St-Sébastien, 9, Paris.  
 Lefebvre, E., rue de la Caspary, 13, Montreuil.  
 Lefèvre, rue des Repas, 31 et 33, Paris.  
 Legay, rue Langier, 42, Paris.  
 Lenczowski, L. et Cie., rue de la Montagne-Genève, 25, Paris.  
 Letourneau, E., avenue Montaigne, 37, Paris.  
 Létrange, L. et Cie., rue des Vieilles-Haudriettes, 1, Paris.  
 Loiseau, A. fils, rue de Richelieu, 2, Fontaine-au-Roi, 57, Paris.  
 Maube, L. et Cie., rue Louis-le-Grand, 3, Paris.  
 Makenstein, H., rue St-Jacques, 71, Paris.  
 Mandroux, L. V., rue Caumartin, 71, Paris.  
 Mangenot, rue d'Ulm, 48, Paris.  
 Marc, J., rue Pavo-Marais, 12, Paris.  
 Marcellas, passage Boquet, 19, Paris.  
 Menier, rue du Théâtre, 7, Grenoble.  
 Metivier, A., rue de Malte, 19, Paris.  
 Meyer, B., boul. St-Denis, 1, Paris.  
 Michaels, J. P., avenue de l'Opéra, 45, Paris.  
 Mugnier et Rouart, boul. Voltaire, 137, Paris.  
 Murard, fils, rue Galande, 57, Paris.  
 Montch, claviers en ivoire et cellulose.  
 Oberkamp, 127, Paris.  
 Mors, L., succ. de l'Éclaircie, 8, Paris.  
 Martin, 4 bis, usine, rue du Théâtre, 40, Paris.  
 Muller, E., rue de Bondy, 69, Paris.  
 Nachter, J., transmetteur Morse, circulaire, 4, Paris.  
 Napoli, D., constructeur de route de rue Poissonnière, 98, Paris.  
 Noé, C. F., rue Languedoc, 9, Paris.  
 Olsen, A., la Rochelle.  
 Paris, E., et Cie., rue Paradis-Poissonnière, Paris.  
 Passaguy, Macon.  
 Pelletier, A. L., appareils de tous genres, Rome, 78, Paris.  
 Perrody, Esprit, rue Chaponnière, 3, Paris.  
 Pierre, F., boul. Malesherbes, 70, Paris.  
 Ramonol, rue Soliman, 11, Paris.  
 Rattier et Cie., rue d'Aboukir, 4, usine à Sèvres-et-Cluse.  
 Rault et Chassin, poste Morse portatif, rue de la Harpe, 62, Paris.  
 Rhéans et Bannier, rue St-Sabin, Paris.  
 Remyer, J. A. C., rue de la Saussaie, 25, Paris.  
 Sauer, J. A. F., divers systèmes de transmission, boul. St-Michel, 58, Paris.  
 Société anon. des télégraphes, 6, rue de la Harpe, 40, Paris.  
 Société générale des télégraphes, rue de la Harpe, 11, Paris.  
 Société universelle d'électricité, 1, rue de la Harpe, 11, Paris.  
 Solignac et Cie., sonde pour les télégraphes et indicateurs, rue St-Maur, 208, Paris.

**phonie (Appareils et fournitures de)**

—*continué.*

., appareil Hughes pour transmission, 116 et 118, Paris.

t fils, rue St. Maur, 146, Paris.

(Postel Vinay, succ.), rue Vanneau, 38,

pareils pour la correspondance, par un inducteur, rue de Boulainvilliers, 57,

**l'élégraphie (Sociétés de).**

*E.—Telegraph Societies.*

*G.—*

e Française des télégraphes de Paris, à ork.

e télégraphe sousmarin entre la France et l'Angleterre, rue Cambon, 45, Paris.

place Philippe de Girard, 3, Lille.

olegraph company (limited), rue Cau- 28, Paris, Marseille et Londres.

ompagnie des télégraphes du nord, rue ., 3, Paris.

**éphone (Entrepreneurs de).**

*E.—Telephone Contractors.*

*G.—*

., et Cie., 3, rue Louis le Grand, Paris, ex des annonces.

et Cie., rue Langier, 26, Paris.

, rue d'Arcole, 13, St. Etienne.

**l'éphones et Microphones.**

*E.—Telephones and Microphones.*

*G.—*

L., rue de Courcelles, 161, Paris.

ue des Arts, 11, Levallois-Perret.

he, Ed., rue Ampère, 54, Paris.

rue du Marteau, 41, Bruxelles.

, rue Rochechouart, 45, Paris.

ue de la Tombe Issoire, 72, Paris.

me., rue Montmartre, 18, Paris.

quai de l'Horloge, 39, Paris.

t Cie., rue Coarbin, 4, Bordeaux.

ie inter. des téléphones, rue des Douze s, 24, Bruxelles.

R., rue Monulpho, 45, Liège, Belgique.

C., rue Caumartin, 75, Paris.

ue Nationale, 231, Lille.

-Labye, rue des Cévennes, 56, Paris.

, E., boul. St. Michel, 123, Paris.

Ve. Charles, rue des Croisades, 14, es.

E. et Cie, rue Claude Bernard, 75, Paris.

t Polletier, rue Montmartre, 99, Paris.

H., rue de Rigoles, 71, Paris.

A. J., place Saint Lambert, 5, Liège, 10.

Charles R., boul. des Capucines, 35,

red. Van, Chaussée d'Anvers, 78, les.

c. anon.), rue des Croisades, 14, Brux-

, J., rue des Cévennes, 56, Paris.

ki, L., et Cie, rue de la Montagne Geneviève, 56, Paris.

**Téléphones et Microphones—*continué.***

Maiche, L., et Cie., société de l'électrophone, rue Louis le Grand, 3, Paris.

Maldant, E., rue d'Armaillé, 21, Paris.

Michailovitch Paul, Gouloubitsky Ateliers, M. de Branville, rue de la Montagne, 25, St. Geneviève, Représentant, M. Krouchkoll, rue Cassini, 6, Inventeur Gouvernement de Kalouga, Taroussa, Russia.

Mors, L., rue Saint Martin, 4, bis. Paris.

Mourlon, Ch., et Cie., rue de Ruysbroeck, 61, Bruxelles.

Muller, E., rue d'Arenberg, 42, Bruxelles.

Pain., rue aux Champs, 6, Caen.

Pelletier, A. L., rue de Rome, 78, Paris.

Pile, E., Rue de la Perle, 24, Paris.

Pollard, Paris.

Postel Vinay, rue Vanneau, 38, Paris.

Regnard, rue Charlot, 28, Paris.

Sieur, Jules Xavier Eugène, boul. Saint Marcel, 38, Paris.

Société générale des téléphones, rue Caumartin, 41, Paris.

Tistut, William, rue de Vaugirard, Paris.

Trouvé, Gust., rue Vivienne, 14, Paris.

Wery, Al., rue de l'Université, 58, Liège, Belgique.

**Téléphones (Sociétés de).**

*E.—Telephone Societies.*

*G.—Telephonen.*

Compagnie internationale des téléphones, société anonyme, 10,000,000 fr., place Vendôme, 15, Paris.

Société générale des téléphones, société anonyme, 25,000,000 fr., rue Caumartin, 41, Paris.

Société générale des téléphones, Siège Social à Paris; Succursale, Bains Sud Quinconces, Bordeaux.

Société générale des téléphones, place de la Gare, 1 et 3, Lille.

Société générale des téléphones, rue Neuve, 1, Lyon.

Société générale des téléphones, Siège Social à Paris, rue des Petits Champs, 66, Succursale, rue de la République, 14, Marseille.

**Timbres pour, Sonneries (fond et march).**

*E.—Electric Bells for Alarms.*

*G.—*

Biron, Ed., rue St. Martin, 237, fonderie; rue Aumaire, 35, Paris.

Crouzet-Hildebrand, rue de Sambre-et-Meuse, 13, Paris.

Leclabart, rue Titon, 14, Paris.

Letrange, L., et Cie., rue des Haudriettes, 1, Paris.

Mangin, L., boul. Richard-Lenoir, 17, Paris.

Pelletier, G., fils, rue Bailly, 5, Paris.

Pierret et Quellier, rue N.D. de Nazareth, 17, Paris.

**Tourneurs en Métaux.**

*E.—Metal Turners.*

*G.—*

Dorijon et fils, rue St. Sabin, 58, Paris,

Droz, Vve, rue Pierre-Levée, 16, Paris.

Dubourquet, A., boul. Magenta, 33, bis, Paris.



## Lampes Électriques et Régulateurs (constr. de.)

*E.—Electric Lamps and Regulators.*

*G.—Electrische Lampen.*

Albaret, A. O., passage du Désir, 2 et 4, Paris.  
 Arnould, L., rue d'Enghien, 77, Paris.  
 Ateliers, Cance, boul. Voltaire, 207, Paris.  
 Ayciron et Clement, boul. Voltaire, 56, Paris.  
 Baillache, E. de, rue Ampère, 54, Paris.  
 Baudet, Cloris, rue Saint Victor, 90, Paris.  
 Bourdin, C., av. de la République, 13, Paris.  
 Bréguet, quai de l'Horloge, 39, Paris.  
 Cance, Alexis, rue Sedane, 28, Paris.  
 Carré, Ferd., rue de Reuilly, 48, Paris.  
 Changy, Ch. de, rue des Arts, 29, Levallois  
 Perret, Paris.  
 Chertemps, A. D., passage St. Sébastien, 11,  
 Paris.  
 Clerc, L., av. Wagram, 42, Paris.  
 Compagnie Belge et Hollandaise d'électricité, rue  
 Royale, 80, Bruxelles.  
 Compagnie Continentale Edison, av. de l'Opéra,  
 33, Paris.  
 Compagnie électrique, rue d'Argenteuil, 19, Paris.  
 Compagnie Française d'électricité (lampe Mondos),  
 boul. Eugène, 47, Neuilly.  
 Compagnie gen. Belge de lumière électrique,  
 rue de France, 18, Bruxelles.  
 Compagnie Parisienne d'éclairage par l'électricité,  
 rue Dufresnoy, 25, Paris.  
 De la Roche, Charles Ferdinand, rue Gaston de  
 St. Paul, 6, Paris.  
 Delaye, V., rue Ordener, 162, Paris.  
 Desruelles, av. Percier, 8, bis, Paris.  
 Dubos, Ch., av. de la Motte-Paquet, 41, Paris.  
 Dubosq, père et fils (lampe Dr. Rognard), rue  
 des Fossés Saint Jacques, 11, Paris.  
 Dubosq, Jules et A., rue Monsieur le Prince, 30,  
 Paris.  
 Gaulard, F., rue Nollet, 65, Paris.  
 Gérard, A., soc. an. d'électricité, passage Cottin,  
 8, Paris.  
 Gérard, A., place St. Lambert, 5, Liège, Belgique.  
 Girard F. et Cie, boul. Henry IV., 44, Paris.  
 Girard, rue de Paris 19, Chilly.  
 Herz Cornelius, rue faub. Montmartre, 10, Paris.  
 Jarrant et Magne, rue Pierre-Charbon, 26, Paris.  
 Jaspas, Jos., rue Jousfossé, 12, Liège, Belgique.  
 Lampe Maxim de Kabath, rept., rue Fortuny,  
 15, Paris.  
 Lampe Nothomb Moulton et Cie, Bruxelles.  
 Lampe Soleil syndicat Franc., de la, av. de  
 Wagram, 42, Paris.  
 Lampe Swan (G. Simon, représ.), rue Charlot,  
 85, Paris.  
 Lenczowski et Cie, rue Montagne-Ste.-Geneviève,  
 25, Paris.  
 Maiche, L., et Cie., soc. de l'électrophone, rue  
 Louis le Grand, 3, Paris. Voir index des  
 annonces.  
 Méritens, E. de, rue Beausault, 44, Paris.  
 Michaels, J. P., av. de l'Opéra, 45, Paris.  
 Milh, Ch., et Cie., av. Langier, 26, Paris.  
 Mora, boul. Richard Lenoir, 91, Paris.  
 Mora L., rue Saint Martin, 1, bis, Paris.  
 Postel-Vinay, rue Vaucaux, 38, Paris.  
 Pilleux et Queanot, à l'Italienne près Beauvais  
 Oise.  
 Puvilland frères, rue Condorcet 23, Paris.  
 Regnard, rue Charlot 28, Paris.  
 Reyner, E., rue Berceville 3, Paris.  
 Sautter, L. Lamont et Cie., av. de Suffren,  
 Paris.  
 Seirin, V., boul. Saint Martin, 1, Paris.

## Lampes Electriques et Regulat (constr. de. continue

Siemens frères, rue Picot, 8, Paris.  
 Société ancess de L'azong l'azong Light  
 Co., rue Saint Anne, 3, Paris.  
 Société de constructions mécaniques et d'  
 électriques, rue St. Florentin 11, Paris.  
 Société l'Eclairage Electrique, système  
 locke & Jamin, Werdermann, Mah  
 Leveurbe, 250, Paris.  
 Société électrique Edison, av. de l'Opéra,  
 Société Française d'électricité, F. Girard  
 boul. Henry IV., 44, Paris.  
 Société Lyonnaise de construct. mécan  
 d'éclairage électrique système Brush  
 sienne-Lentin, rue de Grammont, 19, E  
 Société universelle d'électricité, Tom  
 de Courcelles, 118, Paris.  
 Solignac et Cie, rue Saint Maur, 208, Pa  
 Somzée, L., rue Royale, 217, Bruxelles.  
 Suisse, F., rue des Grands Augustins, 23,  
 Thiers, Rod., rue Claude Bernard, 91, Pa  
 Trouillet, boul. Sébastopol, 112, Paris.

## Lumière Electrique.

*E.—Electric Light*

*G.—Electrisches Licht.*

Albaret, A., Liancourt, Oise.  
 Arnould, L., rue d'Enghien, 77, Paris.  
 Baillache, E. de, rue Ampère, 54, Paris.  
 Ballat, rue St. Fargeau 3, Paris.  
 Barceles, O. de, boul. Richard Lenoir, 117.  
 Barbedienne, F., faub. Poissonnière, 30,  
 Bernard, J., rue de l'Éclairage, Paris.  
 Baudet, Cloris, rue St. Victor, 90, Paris.  
 Beau et Bertrand-Toulet, rue St. Den  
 Paris.  
 Biloret et Mora, boul. Richard-Lenoir, 10.  
 Blouzon, E., rue Notre-Dame-de-Nam  
 Paris.  
 Bourin, C., avenue de la Républ. pa, 12.  
 Bréguet, quai de l'Horloge 39, Paris.  
 Cance, A., rue Sedane 28, Paris.  
 Carré, E., rue de l'Éclairage, 19, et  
 Itardais 4, Paris.  
 Carré F., rue de Reuilly, 48, Paris.  
 Chertemps, A., passage St. Sébastien,  
 Paris.  
 Chellet et Rézard, rue Belle Cordière, 10.  
 Clemenceau, rue Lamartine 23, Paris.  
 Clémantot, L., rue Brochant, 18, Paris.  
 Cie l'Eclairage Electrique, rue Lecour  
 Paris.  
 Cie Française d'Electricité (Lampe M  
 Eugène, 47, Neuilly. Sous  
 Cie Industrielle et Commerciale d'Éclairag  
 de l'Opéra, 33, Ateliers à Paris, Paris.  
 Cie. Parisienne d'éclairage par l'électri  
 Dufresnoy 25, Paris.  
 Courtot, C., rue Chamartin 70, Paris.  
 Danligny, place de la Chapelle 16, Paris.  
 Debra et Law, par Louis XVII 6, Paris.  
 Deherain, P.P., rue d'Argenson 1, Paris.  
 Delaporte, G., rue des Beaux-Arts 2, P  
 Delavert, E., rue Daguerre 77, Paris.  
 Desruelles, L., avenue Percier 8, bis, Pa  
 Dubosq, J., rue d'Odéon 21, Paris.  
 Dubosq, Jules, rue Mazarine 61, Paris.  
 Dufresnoy, Bréguet & Co., rue de la Pa  
 Dufresnoy, boul. de Magenta 18, Paris.  
 Dufresnoy, L., 110, rue de la Chapelle 70,  
 Edison, avenue de l'Opéra de Paris.  
 Fige, A., rue de St. Louis 11, Paris.  
 Fichet, Electric & Power Storage Co., av.  
 l'Opéra, 5, Paris.



## Electrique—continué.

Cie., rue Lafayette, 115, Paris.  
 ., rue Nollet, 65, Paris.  
 H., rue des Rigoles, 71, et rue de  
 re, 50, Paris.  
 passage Cottin, 8, Paris.  
 , avenue d'Eylau, 172, Paris.  
 ., rue Lafayette, 221, Paris.  
 autin, rue St. Maur, 54, Paris.  
 e Pierre-Charron, 25, Paris.  
 ne, rue Béliador, 10, Paris.  
 ) électrique Société Anonyme au  
 6,550,000 francs, rue Lecourbe, 250,  
 e d'Odéon, 21, Paris.  
 e Douhet, avenue Marceau, 68, Paris.  
 , L., rue Montagne-Sto.-Geneviève, 25.  
 ., rue Lafayette, 6, Paris.  
 rue Margfooy, 7, Paris.  
 rue de Londres, 6, Paris.  
 avenue de l'Opéra, 45, Paris.  
 Rouart, boul. Voltaire, 137, Paris.  
 Monceau, 3, Paris.  
 du Château-d'Eau, 44, Paris.  
 t. Martin, 4 bis., Paris.  
 rue du faub. Poissonnière, 98, Paris.  
 e Paradis Poissonnière, 47, Paris.  
 ace Cadet, 27, 29 et 31, Paris.  
 y, rue Vanneau, 38, Paris.  
 ères, rue Oudinot, 23, Paris.  
 rue N. D. de-Nazareth, Paris.  
 rue de Turenne, 116, Paris.  
 e Charlot, 28, Paris.  
 , rue Benouville, 3, Paris.  
 boul. St Martin, 1, Paris.  
 es, rue Picot, 8, Paris.  
 nyme d'électricité (Lampe Gérard),  
 ottin, 8, Paris.  
 nyme des ateliers de constructions  
 s et d'appareils électriques, boul.  
 207, Paris.  
 nyme des hauts-fournaux, et fon-  
 val d'Osne, boul. Voltaire, 58, Paris.  
 achines magnétoélectriques Gramme,  
 t, 15, Paris.  
 rique Edison, avenue de l'Opéra, 33,  
 force et la lumière" avenue de  
 , Paris.  
 nnaise de constructions mécaniques  
 re électrique, rue de Grammont, 19,  
 Suffren, 40, Paris.  
 ienne de fonderie et laminage, rue  
 i-vert, 11, Paris.  
 verselle d'électricité Tommassi, rue  
 ce, 11, Paris.  
 Cie., rue St. Maur, 208, Paris.  
 ue des Grands-Augustins, 23, Paris.  
 place de la Bourse, 31, Paris.  
 nçais de la Lampe Soleil, avenue de  
 42, Paris.  
 l Electric Light Co., Limited (Nelson  
 l, directeur), usine, rue des Sarrazins,  
 ue des Feuillantines, 91, Paris.  
 , boul. Sébastopol, 112, Paris.

## Machines Électriques.

E.—*Electrical Machines.*

G.—

t Cie., 3, Rue Louis le Grand, Paris.  
*des annonces.*

## Machines Magnéto-Électriques et Dynamo-Électriques.

E.—*Dynamo and Magneto Electric Machines.*

G.—*Dynamo-Maschinen.*

Agence Générale d'Électricité (Louis Liepmann,  
 directeur), passage des Panoramas, galerie des  
 Variétés, Paris.  
 Ateliers, Cance, boul. Voltaire, 207, Paris.  
 Baudet, Cloris, rue St. Victor, 90, Paris.  
 Boez, Ch., rue Rochechouart, 45, Paris.  
 Bignon, rue de la Tombe-Issoire, 73, Paris.  
 Biloret et Mora, boul. Richard-Lenoir, 93 et 95,  
 Paris.  
 Bonnet, G., boul. Filles-du-Calvaire, 5, Paris.  
 Bourdin, C., avenue de la République, 13, Paris.  
 Bréguet, quai de l'Horloge, 39, Paris.  
 Cance, A., rue Sedaine, 28, Paris.  
 Carpentier, et Bianchi, successeurs de Ruhmkorff,  
 rue Champollion, 15, Paris.  
 Carré, Edmond, rue de l'Estrapade, 49, et rue  
 des Irlandais, 4, Paris.  
 Carré, Ferdinand, rue de Reuilly, 48, Paris.  
 Chameroy, H., Maisons-Lafitte, Seine et Oise.  
 Chertemps, passage Saint-Sébastien, 11, Paris.  
 Com. Continentale Edison, avenue de l'Opéra,  
 33, Paris.  
 Com. Parisienne d'éclairage par l'électricité, rue  
 Dufresnoy, 25, Paris.  
 Com. universelle d'électricité Tommassi, boul. de  
 Courcelles, 118, Paris.  
 Courtot, rue Caumartin, 75, Paris.  
 Deffez, L. Fr., rue Saint-Séverin, 34, Paris.  
 Delaurier, E., rue Daguerre, 77, Paris.  
 Dubos, C., avenue de la Motte-Piquet, 41, Paris.  
 Ducretet, E., et Cie., rue Claude-Bernard, 75,  
 Paris.  
 Estéve, A., à la Réole, Gironde.  
 Faure Electric Accumulator Co., avenue de  
 l'Opéra, 5, Paris.  
 French electrical power storage Co., avenue de  
 l'Opéra, 5, Paris.  
 Gaiffe, L. A., rue St. André-des-Arts, 40, Paris.  
 Gérard, A., passage Cottin, 8, Paris.  
 Géraud, F., rue de Paris, 19, Clichy.  
 Geyter, G. de Mouscron, Belgique.  
 Gotendorf, Silvanus N., 166, quai Jemmapes,  
 Paris.  
 Gire, E., rue de la Gaîté, 4, Paris.  
 Hardy (Hayet et Lignereux succ.), avenue de la  
 Motte-Piquet, 6, Paris.  
 Hultz, Alph., rue Danville, 18, Paris.  
 Humboldt, P. Césaire, rue Saint Charles, 77,  
 (Grenelle), Paris.  
 India rubber, gutta percha & tel. works Co.,  
 boul. Sébastopol, 97, Paris.  
 Jarriant et Magne, rue Pierre-Charron, 25, Paris.  
 Jaspar, Jos., rue Jousfosse, 12, Liège, Belgique.  
 Lampe-Soleil. (syndicat français de la), avenue  
 de Wagram, 42, Paris.  
 Legras, Gr. Th., avenue de Paris, 81, St.  
 Denis (Seine).  
 L'Eclairage électrique Société Anonyme au  
 capital 6,550,000 francs, rue Lecourbo, 250,  
 Paris.  
 Leuzard, Léon, rue d'Arcole, 21, Paris.  
 Méritens, E. de, rue Boursault, 44, Paris.  
 Mignon et Rouart, boul. Voltaire, 137, Paris.  
 Mildé fils et Cie., rue Langier, 26, Paris.  
 Mora, C., boul. Richard-Lenoir, 93, Paris.  
 Pezzer, Dr. de, rue Sainte-Anne, 65.  
 Pilleux et Quesnot, Italienne, près Beauvais,  
 Oise.  
 Radiguet et fils, boul. des Filles-du-Calvaire, 15,  
 Paris.



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**ANNUAIRE ÉLECTRIQUE**  
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**J. A. BERLY,**  
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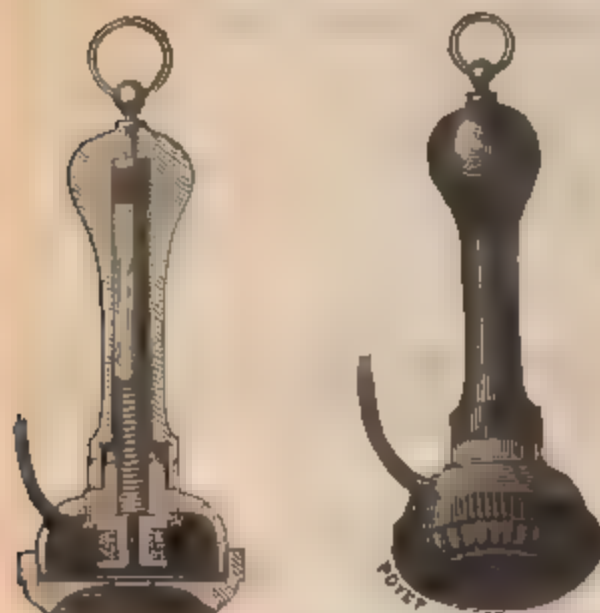


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*F.—Accumulateurs d'Electricité.*

r., Berlin.

r, Dr. E., Leipzig.

: Aron, Berlin.

W. J., Wien, Kettenbrückengasse, 20.

Dr. A., Underberg.

nd Wolf, Wien, Van Suretengasse, 12.

n, Underberg.

, O., Strassburg.

K. W., Professor, Prag.

### Asbest-Fabriken und Händler.

—*Asbestos Manufacturers and Dealers.*

*F.—Amiante (Fab. d').*

Co., Berlin, Neu Kölln a/W. 16.

L., Berlin, Lindenstr. 21/22.

: Co., Berlin, Rosenthalerstr. 19.

: & Co., Berlin, Kochstr. 73.

: & Co., Wien, Oppolzergasse, 4.

### Beleuchtungs-Artikel.

*E.—Light Fitting Manufacturers.*

—*Eclairage (Fab. d'appareillage d')*

: Sohn, Berlin, Alte Jacobstr. 2.

en, G., sr., Cöln a/Rh.

Co., Berlin, Seydelstr. 24.

& Robert, Berlin, Ritterstr. 31.

Devos, Berlin, Gitschinerstr. 74.

Nat., Halle a/S.

: Co., Berlin, U. d. Linden 66.

: Moedebeck, Berlin, Stralauerplatz 6/7.

J. E., & Neuhardt Fr., Wien, Stolzen-  
gasse, 6.

& Hees, Berlin, Kommandantenstr. 53.

Berlin, Andreasstr. 72/73.

Mois, Sigmaringen.

: Hauschner, Berlin, Friedrichstr. 233.

### Beleuchtungs-Artikel.—*Fortsetzung.*

Spinn, J. C., & Sohn, Berlin, Wasserthorstr. 9.

STAUDT, EMIL, FRANKFURT A/M.

Stern, L., Aachen.

Stobwasser, C. H., & Co., Berlin, Wilhelmstr.

Tritschler, Winterhalter & Co., Oedhütte bei  
Fürth.

Valentin, J., Frankfurt a/M., Neue Mainzerstr.  
56.

Westphal & Co., Berlin, Kommandantenstr. 41.

### Blitzableiter-Fabriken.

*E.—Lightning Conductor Manufacturers.*

*F.—Paratonnerres (Fab. de).*

Bein, Adolf. & Co., in Görz (Istrien) Cypressi, 2.

Egger, B., Budapest, Rudolfo Quai, 8.

Harrach, Georg, München, Dachauerstr. 35.

Kernaul, J., München, Kreuzstr. 25.

Kirchhoff, H., Berlin, N., Chausseestr. 77.

Mayrhofer, Georg, Wien, Wipplingerstrasse, 27.

Mix & Genest, Berlin, Prinzessinnenstr. 23.

Ulfort, Berlin, Schönhauserallee 122.

Wehr, Berlin, Ritterstr. 49.

Wolters, W., Wien, Kärntnerstrasse, 30.

### Boussolen.

*E.—Compasses.*

*F.—Boussoles.*

Skriwanek, Franz, Wien, Breitengasse, 21.

### Braunstein.

*E.—Manganese.*

*F.—Manganèse.*

Deberto, Ivan, Agram, Ilica, 5.

MINNER, WILHELM, ARNSTADT, THÜR.

### Codex für Telegraphie.

*E.—Telegraphic Codifiers.*

*F.—Codificateurs Télégraphiques.*

Schacht & Westerich, Hamburg.

## Draht-Fabriken.

### *E.—Wire Manufacturers.*

### *F.—Trèfleurs.*

Aachener Hütten - Actien - Verein, Rothe Erde b/Aachen.  
 Actiengesellsch. f. Drahtfabr., Eschweiler b/Aach.  
 Adrian, Fr., Berlin, SW., Alexandrinenstr. 25.  
 Ardey, Fr., Altena i/Westph.  
 Asten, v. & Lynen, Stolberg b/Aachen.  
 Auffermann, J., Barmen.  
 Aurnhammer, A., Treuchtlingen.  
 Bader, Wilh., Pulsnitz i/S.  
 Basse & Solve, Altena i/Westph.  
 Becker & Co., Johannisthal b/Iserl.  
 Becke, H. von der, Dicken b/Iserl.  
 Becke, von der, & Co., Hemer, Westph.  
 Bockert, C., Ulm.  
 Boling, B., Söhne, Eisen, Hellenthal b/Kirch-  
 oiffen, Westph.  
 Berberich, F., Hanau a/M.  
 Bergbau- & Hütten-Actiengesellschaft, Alten-  
 kunden a/Lenno.  
 Berger, J. U., & Sohn, Schwabach, Baiern.  
 Berg, Carl, Eveking b/Werdohl i/W.  
 Bernirighaus, C., Elberfeld.  
 Boecker, Fr., & Sohn, Hohenlimburg.  
 Boecker & Haver, Hohenlimburg.  
 Boecker & Co., Schalke, Westph.  
 Boessner, F., Augustenthal b/Neuw.  
 Bondy, Anton, & Sohn, Wien VII. Neutiftgasse,  
 66.  
 Böhmes, Aug., Liegnitz, Schles.  
 Class, J. A., Altena i/Westph.  
 Desmossieurs, F. A., Friedrichsthal b/Plottenb.  
 Dinke, C. F., Ringlstein b/Büren i/W.  
 Dörseler & Co., Werdohl, Westph.  
 Drahtwaaren-Fabrik Falkau, Falkau, Baden.  
 Draht- & Schrauben-Fabrik, Falkau, Baden.  
 Dreher & Sohn, Gerresheim b/Düsseld.  
 Dresler, H. A., Siegen.  
 Dresler, H. A., & W., Creuzthal b/Siegen.  
 Düsseldorfer Eisen- & Draht-Industrie, Düssel-  
 dorf-Oberbilk.  
 Eisen- und Drahtwerk Erlau b/A., Erlau b/Aalen.  
 Engler, J., Bornheim.  
 Engster, J., Augsburg.  
 Fauler, P. H., Freiburg, Baden.  
 Feckes, J. umspinn. Draht, Anrath b/Cref.  
 Felten & Guillaume, Cöln.  
 Fischer, Gebr., Evingsen b/Altena.  
 Franck & Co., Schlettstadt i. E.  
 Geck, Gebr., Rahmede b/Altena.  
 Geitner, Dr., Auerhammer, Sachsen.  
 Gilardi, Jac., Allersberg b/Roth a/Sand.  
 Goswin, Heinr., Ihmert b/Iserlohn.  
 Grieshaber, Gebr., Triberg, Baden.  
 Guttenberg, v. & zu, Lauf, Baiern.  
 Heckel, G., St. Johann-Saarbrücken.  
 Hecker, Chr. Gottl., Leipzig.  
 Hesse, F. A., Söhne, Hedderheim bei Frankfurt  
 a/M.  
 Hirsch, A., & Co., Cassel.  
 Holdhaus, W., Altomühle b/Werdohl.

## Draht-Fabriken.—Fortsetzung.

Hühnerkopf, J., Telegr., Erlangen.  
 Hühnerkopf, G., jr., Erlangen.  
 Kaiser, J. G., Unterkochen, Württemb.  
 Katerlöh & Niggeliet, Plettenberg i/W.  
 Kern, H., & Co., Gleiwitz, Schles.  
 Kissing & Möllmann, Menden.  
 Kleinholz, Herm., Oberhausen.  
 Klinke, Fr., Söhne, Altena i/Westph.  
 Kock, C. J., Bergwerkdraht, Hohenlimburg.  
 Krämer, Gebr., St. Ingbert, Pfalz.  
 Krieger & Co., Pforzheim.  
 Kufferath, A., Mariaweiler b/Dürren.  
 Kuhlmann, Grüne b/Iserl.  
 Kuhn, E., versilb. Drähte, Nürnberg.  
 Leuchtenberg, N., Duisburg.  
 Lieso, Joh Friedrich, Wien, Zollergasse, 36.  
 Messing-Gewerkschaft, Oese b/Iserl.  
 Neue Berliner Messingwerke, Berlin, SW., K  
 str. 30.  
 Neufeld, C. L., Dortmund.  
 Noell, Casp., Vogelberg b/Lüdensch.  
 Noell & Co., Messingw., Lüdensch.  
 Obermaier, J., Nürnberg, Untere Baustr. 20.  
 Obermaier, J., Telegraphendraht, Nürnberg.  
 Pauly-Stahel, G., & Co., Mengen bei Würzb  
 Reinhard, G., Schwelm.  
 Reinhardt, C., Schmalkalden, Thür.  
 Reuter, A., Lössnitz i/S.  
 Rhein. Walzwerk, E. Böcking & Co., Mülheim.  
 Risse & Schöneberg, umspinn. Drähte, Iserl  
 Rohländer, C. D., Stephanopel b/Huer.  
 Rohr, G., Caldenhausen b/Uerdingen.  
 Roth, Heck & Schwinn, Ixheim b/Zweibr.  
 Sasserath, F. A., Berlin, SO., Schmidtstr. 37  
 Schacherer, C., Telegraphen, Mannheim.  
 Schacherer, Carl, Mannheim.  
 Schleicher & Sohn, Aachen.  
 Schleip, Gebr., Kusel, Rheinpf.  
 Schleith, Gebr., & Co., Wisleth, Baden.  
 Schmidt, Gust., & Sohn, Einsal b/Altena.  
 Schmidt, W., Elverlingsen b/Werdohl.  
 Schönemann, F., München.  
 Schumann & Zersch, Salzwedel.  
 Selter, Ludw., Eisendraht, Altena i/Westph.  
 Simon, A., Aalen, Württemb.  
 Sirringhaus, G., Menden.  
 Söhngen & Bolenius, Bruch b/Schwelm  
 Spatz, Wwo., Hausimfelde b/Halle a/S.  
 Spelsberg & Klinke, Rathmecke b/Lütenschei  
 Stahel, Pauly, Mengen, Württemb.  
 Steinhauser Draht-Industrie, Bommern b/Wit  
 Stieber, Joh. F., Roth b/Nürnb.  
 Trurnit, Gebr., Karlswerth b/Menden.  
 Ukana, Theod., Papenburg, Hanau.  
 Voss, Seisenschmidt & Schröder, Plettenberg i  
 Walzholz, C. D., Hohenlimburg.  
 Weiller, Lazare, Wien, Bellariastr. 8.  
 Westphälischer Draht-Industrie-Verein, Ha  
 i/Westph.  
 Westphälische Union, Hamm i/Westph.  
 Westph. Union, Actiengesellsch., Baldecke.  
 Westph. Union, Actiengesellsch., Lippstadt.  
 Westph. Union, Actiengesellsch., Nachrodt.

**Draht-Fabriken.—Fortsetzung.**

Wieland & Co., Ulm.  
Wild, Arn., Gemünd, Rheinpr.  
Wilke, H. D., Letmathe.  
Wolfart, G., Ammendingen b/Memmingen.  
Wolff, Gebr., Nheim a/Rh.  
Witte & Kämper, Osnabrück.  
Zugmayer, Georg & Söhne, Wien, Bräunerstr. 10.

**Drahtseile, Kabel, etc.**

*E.—Cable and Wire Rope Manufacturers*

*F.—Câbles et Fils télégraphiques (Fab. de).*

Bellmann, Berlin, Sophienstr. 17.  
Bubman, W., & C. Hirschman, Wassertrüdingen.  
Egydier, Eisen und Stahl Industrie Gesellschaft, Wien, Elisabethstr. 13.  
Felten & Guillaume, Cöln.  
Hesse, F. A., Söhne, Hedernheim.  
Kössel, Otto, & Sohn, Hannover.  
Mix & Genest, Berlin S. Wasserthorstr. 34.  
Neue Berliner Messingwerke, Berlin, Kochstr. 30.  
Oberwarth, Berlin, Zimmerstr. 33.  
Pauly, G., & Co., Mengen, Württemberg.  
Schwartz, Ad., & Co., Berlin, Kochstr. 73.  
Sorge & Schma, Berlin, Greifswalderstr. 22.  
SPEISER, CARL, NÜRNBERG.  
Westphälische Union-Werke, Hamm.

**Dynamo-Maschinen.**

*E.—Dynamo-Machine Manufacturers.*

*F.—Machines Dynamo Electriques (Fab. de).*

Edelmann, Dr. M. Th., München.  
Egger, Kremenezky & Co., Wein, Grünethor-gasse, 19.  
Einstein, J., & Co., München.  
Fein, C. & E., Stuttgart.  
Fraas, Joh., München.  
Fraas. Gebrüder, Wunsiedel, Bayern.  
Ganz & Co., Wien, Schwarzenbergplatz 6.  
Heller, Friedrich, Nürnberg, Vordere Sternng. 12.  
Kröttlinger, Franz, Wien, Schlossgasse, 4.  
Lamberg, Alex. Wilh., Linz, Stiftergasse, 10.  
Mayer und Wolf, Wien, Van Swietengasse, 12.  
Neumann, Schwarz & Weil, Freiburg i/Baden.  
Piette & Krizik, Pilsen, Böhmen.  
Plössel, S., & Cie., Wien, Goldegasse, 6.  
Rychnowski, Franz, Lemberg, Ossolinskigasse, 10.  
Schuckert, Sigmund, Nürnberg.  
Schwerd, C. & E., Karlsruhe.  
Siemens & Halscke, Berlin.

**Eisenbahnbau-Unternehmer.**

*E.—Railway Contractors.*

*F.—Chemins de fer (Entrepreneurs de).*

Bachstein, Berlin, Grossbeerenstr. 89.  
Davy, Donat & Co., Berlin, v. d. Heydtstr. 4.  
Görding & Birnbaum, Berlin, Lützowstr. 85.  
Hornemann & Co., Berlin, Greifswalderstr. 8.  
Marcks & Balke, Berlin, Hornstr. 3.

**Elektro-Techniker.**

*E.—Electricians.*

*F.—Electriciens.*

Aron, Dr., Berlin.  
Bähr, Hugo, Dresden.  
Blänsdorf, Richard, Frankfurt a/M., Kaiserstr. 25.  
Brückner, Ross & Consorten, Wien, Baumgasse 5.  
Brunn, Otto, Dresden.  
Czerny, Paul, Mähr Ostrau, 606.  
Daninger, Adolf, Wien, Minoritenplatz, 4.  
Eckart, Gebr., & Heinrich Rabe, Hanau.  
Edelmann, Dr. M. Th., Gabelsbergerstr. 76, München.  
Ehrenberg, W. von, Zürich.  
Friedländer, Josef, Wien, Hintere Zollamtsstr. 13.  
Frischen, J., Berlin, SW., Gitschinerstr. 107.  
Gentili, Amadeo, Berlin, Voss Strasse 13.  
Grünfeld, August Edward, Wien, Ottakring Laudongasse, 21.  
Harlacher, A. R., Prag, Palackygasse, 5.  
Hauck, W. G., Wien, Kettenbrückengasse, 20.  
Hedinger, Dr. A., Stuttgart, Friedrichstr. 4.  
Hausmann, Johann, Mühlheim a/Rh.  
Hummel, Georg, Moosburg, Oberbayern.  
Jenc, Johann, Pola (Istrien).  
Jeullig, Max, Wien, Jacobergasse, 8.  
Kittel, Adolf, Wien, Kaiserstr. 74.  
Kratschner, Hans, Wien, Währing, Wienerstr. 16.  
Krösswang, Louis, Wr. Neustadt, Bräunlich-gasse.  
Leuner, Oscar, Dresden, kgl. Polytechnikum.  
Lipp, Josef Wilhelm, Wien, Nussdorferstr.  
Lowenfeld, Dr. Leopold, München, Gärtnerplatz, 2.  
Mach, Prof. Dr. Ernst, Prag, Weinberggasse, 3.  
Mendel, Berthold, Berlin, Grosse Friedrichstr. 68.  
Metzger, Alt-Breisach i/Br.  
Michael, Dr. J., Hamburg, Neuerwall, 44.  
Moessen, Robert, Wien, Alleegasse, 38.  
Miller, Oscar von, München.  
Nippoldt, Dr. W. A., Frankfurt a/M.  
Ott, A., Kempten (Bayern).  
Pfaundler, Dr. Leopold, Innsbruck, Meinhartstr. 3.  
Pierre, Dr. Victor, Wien, Wohllebengasse, 14.  
Rack, A. & Co., Wien, Praterstr. 47.  
Salcher, Dr. Peter, k. k. Marine Akademie, Professor in Fiume.  
Scharnweber, Ludwig, Karlsruhe i/B.  
Scheuren, Dr., Kiel.  
Schmidt, Carl Gust., Chemnitz (Sachsen), Wiesenstr. 53  
Schmidt, Franz, Prag, Ferdinandstr. 38.  
Schöneich, Carl, Kattowitz, O/Schl.  
Siemens, Arnold, Berlin, SW., Markgrafenstr. 94.  
Siemens, Wilhelm, Berlin, SW., Markgrafenstr. 94.  
Siemens, Dr. Werner, Berlin, SW., Markgrafenstr. 94.  
Slaby, Dr., Berlin, C., Gertraudtenstr. 25.  
Siemsen, Rudolf, Hannover.  
Steflitschek, Franz, Wien, Bürgerspitalgasse, 20.  
Stein, Dr. S. H., Frankfurt, a/M., Kaiserstr. 25.  
Stummer, Rudolf, v. Traunfels & Josef Krämer, Wien Maximilienstr. 8.  
Uppenborn, F., Nürnberg.

## Elektro-Techniker.—Fortsetzung.

Voss, J. Robert, Berlin, N.O., Pallisadenstr. 20.  
 Waltenhofen, Dr. Adalbert von, k. k., Regierungsrath und Professor, Prag.  
 Walter, Jean Baptiste, Hof, Bayern.  
 Wenzel, Wilhelm, Wien, Friedrichstr. 2.  
 Zenger, Carl Wenzel, Prag, Nostitzgasse, 5.  
 Zetzsche, Dr., Berlin, N., Weissenburgerstr. 66.  
 Zeufelhart, J. N. Wien, Grosse Neugasse, 1.

## Electrische Agenturen.

*E.—Electrical Agencies.*

*F.—Agences électriques.*

AGENTER FÜR ELEKTRICITÄT, James F. Fairman, Director, Inventor's Institute, Cooper Union, New York, U.S.A. Alles was in das electrische Fach einschlaegt. Weitere Auskunft wird gerne ertheilt.

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## Electrische Apparate.

*E.—Electrical Apparatus Makers.*

*F.—Appareils électriques (Fab. d').*

Aleiter, Mart., Mainz.  
 Bischof, Berlin, Oranienburgerstr. 75.  
 Böhm & Wiedemann, München.  
 Bornhardt, A., Braunschweig.  
 Braun & Heider, Wien, Schwarzenbergplatz 6.  
 Czeija, Carl, Wien, Zieglergasse 27.  
 Dölcher, Charles, Wien, Gumpendorferstr. 6.  
 Dold, Ch., Luxemburg.  
 Eck, Wilhelm, Berlin, Wilhelmstr. 121.  
 Fein, C. & E., Stuttgart.  
 Findeisen, Th., Berlin, Jägerstr. 75/76.  
 Geiss, Ch., Bockenheim.  
 Götze, F. O. R., Leipzig, Hartelstrasse 6.  
 Hagedorn, Berlin, Ritterstr. 75.  
 Hartmann, E. & Co., Würzburg.  
 Miller Ritter v. Hauensfels, A., Gray, Sperbersbachgasse 26.  
 Haviland, Robert Langstaff, Wien, Stoss in Himmell 3.  
 Hening, Berlin, Gartenstr. 58.  
 International Electric Company, Wien, Campner-Strasse 43.  
 Jirasko, Josef, Wien, Margarethenstrasse 36.  
 Krüger, Berlin, Simeonstr. 20.  
 Kunzemann, Berlin, Oranienstr. 23.

## Electrische Apparate.—Fortsetzung.

Lotter, J., Frankfurt a/M.  
 Mahlor & Eschenbacher, Wien, Maximilianstr. 1.  
 Mayrhofer, Georg, Wien, Wipplingerstrasse 27.  
 Meer, Gebr., M.-Gladbach.  
 Oottel, Berlin, Schmidstr. 31.  
 Peschel, Berlin, Müllerstr. 3a.  
 Queva, Berlin, Breslauerstr. 3a.  
 Reiner, Frederic, München, Müllerstrasse 48c.  
 Reinhardt, C. F. & W., Berlin, Rosenstr. 29.  
 Reiniger, E. M., Erlanger (Bayern), Schloßplatz 3.  
 Reutlingen, B. C., Frankfurt a/M.  
 Rosenthal, Berlin, Chausseestr. 113.  
 Schick, Bernard, Wien, Piaristengasse 42.  
 Schlag & Behrend, Berlin, Alexanderstr. 70.  
 Schöne, Edwin Floreny, Gross Röhren (Sachsen).  
 Schulmeister, Ludwig, Wien, Lerchengasse 2.  
 Sendtner, Michel, München, Schillerstrasse 22.  
 Siemens & Halske, Wien, Apostelgasse 14.  
 Silas, Ferdinand, Wien, Opernring 19.  
 Sokolt, Gebr., Berlin, Plantufer 3.  
 Stern, L., Essen a/R.  
 Trompler, Berlin, Mariannenstr. 35.  
 Voss, Berlin, Pallisadenstr. 20.  
 Weichmann, Johann, München, Müllerstrasse.  
 Weill, Gebr., Frankfurt a/M.  
 Wilk, Aug., Darmstadt.  
 Wolters, W., Wien, Kärntnerstrasse 30.  
 Zehle, Berlin, Scalitzerstr. 46.  
 Ziembinski, Stanislaus, Wien, Madalenenstr. 1.

## Electrische Batterien.

*E.—Electric Battery Makers.*

*F.—Piles électriques (Fab. de).*

Baudach, Herrm., Bunzlau.  
 Ernst, C. F., Stettin.  
 Greb, W. & Co., Frankfurt a/M.  
 Haertelt, H., Liegnitz i/Schl.  
 Hagen, W. von, Frankfurt a/M.  
 Lautensack, Daniel, Wien, Volkertplatz 2.  
 Raschke, H. F. J., & Co., Stettin.  
 Reluck, Gustav, Prag, Altstadt, Bethlehemsp. 251.  
 Wolters, W. Wien, Kärntnerstrasse 30.  
 Zander & Hoff, Frankfurt a/M.

## Electrische Beleuchtung.

*E.—Electric Lighting Contractors.*

*F.—Eclairage électrique (Entrepreneurs pour).*

Baehr, Hugo, Dresden.  
 Bau, Berlin, Hasenbade 36.  
 Boeddinghaus, Jul., Düsseldorf.  
 Böttner, Aug., Zwickau.  
 Campbell, Wm., & Co., Hamburg, Neuerwall.  
 Elsässische Electricitäts-Gesellschaft, Strassburg.  
 Felten & Guillaume, Köln.  
 Greiner & Friedrichs, Stützenbach.  
 Hagedorn, Berlin, Ritterstr. 75.  
 Hartz, P. F. A., Hamburg, alte Börse 8.



**Electrische Beleuchtung.—Fortsetzung.**

Heller, Fried., Underberg.  
Hennig, Berlin, Gartenstr. 58.  
Hennig, O., Berlin, Invalidenstr. 127.  
Horn, Berlin, Hollmanstr. 35.  
Huber, J. L., Hamburg.  
Kummer, O. L., & Co., Dresd., Waisenhausstr. 27.  
Mayr, Joseph, München.  
Mendel, Berthold, Berlin, Lützowstr. 84.  
Milde, Albert, Wien, Untere Viaductgasse 37.  
Müller, C. H. F., Hamburg.  
Müller, C. H. H., Hamburg, Sonnenstr. 23.  
Mundt, Nicolasis, Wien, Woyringergasse 13.  
Schönemann, F., München, Utzschneiderstr. 7.  
Schuch & Wiegel, Berlin, Franzstr. 9.  
Schulz, Berlin, Georgenkirchstr. 48.  
Schwerd, L. E., Karlsruhe.  
Seeligmann, E., Karlsruhe.  
Siemens, Glashütten, Dresden.  
Siemens & Halscke, Berlin.  
Tenner, Armin, Berlin, SW., Zimmerstr. 34.  
Trempler, Berlin, Mariannenstr. 35.  
Uppenborn, F., jr., Hannover.  
Wehr, Berlin, Ritterstr. 49.  
Willmann, C., Hamburg, hohe Bleichen 5.  
Wörtmann & Fröhlich, Düsseldorf.

**Electrische-Glocken.**

*E.—Bell Founders.*

*F.—Sonneries électriques.*

Becker & Frowein, Berlin, Gartenstr. 154.  
Borchert & Sohn, Berlin, Alte Jacobstr. 110.  
Collier, Berlin, Prinzen-Allee 66.  
Grossheim, Berlin, Ackerstr. 108.  
Heckmann, C., Berlin, Schlesiensche Str. 18.  
Hugo, Alisch & Co., Berlin, Belle Alliancepl. 11.  
Jauck, G. A., Leipzig.  
Jauck, G. A., Leipzig. Schlagglocken für electrische Glocken.  
Kortman, W., Berlin, Dresdenerstr. 79.  
Krebs, C. G., Berlin, Michael Kirchplatz 6.  
Retschke, Berlin, Heilige Geiststr. 12.  
Schaeffer & Oehlmann, Berlin, Chaussestr. 40.  
Schoenbehrend, Berlin, Gr. Frankfurterstr. 122.  
Skriwaulk, Franz, Wien, Breitegasse 21.  
Theiling, A., & Reichenbach, Magdeburg.  
Weinert & Schmidt, Berlin, Stromstr. 42.  
Ziegenspeck, Berlin, Kommandantenstr. 56.

**Electrisches Licht.**

*E.—Electric Light.*

*F.—Eclairage électrique.*

Action-Gesellschaft für Fabrikation von Bronzewaaren & Zinkgasse, Berlin S. Wasserthorstrasse 9.

Braun & Heider, Wien, Schwarzenberplatz 6.  
Buntzen, Jacob, Berlin, S. W.  
Greiner & Friedrichs, Stützerbach, Thüringen.  
Hauck, W. J., Wien, Kettenbrückengasse 20.  
Müller, C. H. Florenz, Hamburg, Loninstr. 23.  
Piette & Krizik, Pilsen, Böhmen.  
Plössel, S., & Cie., Wien, Goldegasse 6.

**Electrisches Licht.—Fortsetzung.**

Prinz, Dr. August, & Co., Baumgarten, Hauptstrasse 35, nächst Wien.  
Rainer, Dr. Jacques, Wien, Kärntnerstrasse 22.  
Riatti, Vincenzo, Wien, Griselstrasse 5.  
Rychnowski, Franz, Lemberg, Ossohnskigasse 10.  
Spiecker & Co., Wien, Pelikangasse 16.  
Wolff, Hess, & Co., Wien, Operngasse 14.

**Electrische Mess-Apparate.**

*E.—Electric Measuring Instruments.*

*F.—Appareils servant aux mesures électriques.*

Egger, B., Wien, Kleine Neugasse 23.  
Mayer & Wolf, Wien, Van Swietengasse 12.

**Electrische Uhren.**

*E.—Electric Clocks.*

*F.—Horloges électriques.*

Honisch, Franz, Rossitz, Mähren.  
Winbauer, Alvis, Baden, Theresiengasse 1.  
Wolters, W., Wien, Kärntnerstrasse 30.

**Galvanische Kohlen.**

*E.—Electric Carbons.*

*F.—Charbons électriques.*

Bendl, Jos., Kaufbeuren, Bayern.  
Gerrabock, Ludwig & Co., Eggenthal, Bayern.  
Lessing, Dr. Albert, Nürnberg.  
Zeller, J. & Co., Sonthofen.

**Galvanoplastiker.**

*E.—Electrotypers.*

*F.—Electrotypie.*

Fröden, Adolf Mayer, Wien, Eszterhazygasse 30.  
Gursch & Klemm, Berlin.  
Hasenköhl, M. Wien, Elisabethstrasse 1.  
Kalmar, J., Wien, Liedengasse 21.  
Koretz, Anton, Wien, Währing, Johannesgasse 415.  
Krausz, Carl, Wien Richtergasse, 7.  
Kühnau, Rich., Leipzig.  
Küstermann & Co., Berlin.  
Otto, Albert, Leipzig-Roudnitz.  
Plage's Nachfolger (Moriz Nackh), Wien, Mariahilferstr. 117.  
Rochlitz, R., Hamburg.  
Spitzauer, A. & Co., Graz (Steiermark), Elisabethinergasse 22.  
Sturm, O., Leipzig-Schönefeld.

**Gasmotoren.**

*E.—Gas Motors.*

*F.—Moteurs—Gaz.*

Arndt, J., Lübeck.  
Berlin-Anhalt. Maschinenbau - Actien - Gesellschaft, Berlin-Moabit.  
Buss, Sombart & Co., Magdeburg.  
Cölner Maschinenfabrik, Carl Beissel & Co., Ehrenfeld.

## Gasmotoren.—*Fortsetzung.*

Filler, Friedr., Eimsbüttel-Hamburg.  
 Gasmotorenfabrik, Deutz bei Cöln.  
 Glossier, Gebr., Frankenthal i/Pfalz.  
 Hallmann, Jos., Wien.  
 Jülg & Co., Basel.  
 Körting, Gebr., Hannover.  
 Langen & Wolff, Wien.  
 Lossen, Gebr. J. & C., Darmstadt.  
 Mark, X., Basel.  
 Markuth, T., Hamburg.  
 Mesthaller & Co., Nürnberg.  
 Möller & Blum, Berlin.  
 Reissel, C., & Co., Ehrenfeld b/Cöln.  
 Steinle & Hartung, Quedlinburg.

## Glasfabriken.

*E.—Glass Works.*

*F.—Verreries et vases.*

Actiengesellsch. f. Glasfabrik., Spiegel, Fürth, Baiern.  
 Bakalowits, Fr., & Söhne, Wien, Hoher Markt 5.  
 Campe & Co., Berlin, Seydelstr. 24.  
 Czeika, J., & Pokorny, Wien, Taborstrasse 20.  
 Danneleit & Klein, Berlin, Lindenstr. 25.  
 Glasfabrik - Actiengesellschaft Goldbach, Floss, Baiern.  
 Hanauer, F., für Photographen, Annathal bei Schönsee, Baiern.  
 Heubach & Co., Augen, Lauscha i/Th.  
 Kiecke, E., Tafelglas, Dittelsdorf, Kr. Sprottau, Schlesien.  
 Kuhnert, G., & Co., Perlen etc., Ernstthal bei Sonneberg.  
 Lazarowitz, F., Boxhagen bei Berlin.  
 Lorbach, V., Glasbläserei, Hildburghausen.  
 Müller, H. C. F., Hamburg.  
 Oettinger, Berlin, Ritterstr. 90.  
 Primavesi, J. C. F., & Sohn, Glasbläserei, Magdeb.  
 Poncet'sche, von, Glashüttenwerke, Berlin, Köp-  
 nickerstr. 54.  
 Reich, S., & Co., Wien, Czerningasse, 3.  
 Reich, D. J., Berlin, SW., Hallisches Ufer 10.  
 Rhein. Glashütten - Actiengesellschaft, Cristal, Flacons, Ehrenfeld b/Cöln.  
 Rohrbeck, D. Herrman, Berlin, Königgrätzerstr. 112.  
 Schachtel, Charlottenbrunn i/Schl.  
 Schlag & Behrend, Berlin, Alexanderstr. 70.  
 Schreiber & Neffen, Wien, Liechtensteinstrasse 22 & 24.  
 Stoelzles, C., & Söhne, Wien, Freihaus-Kaupt-  
 strasse 2.  
 Warmbrunn, Quilitz & Co., Berlin, Rosenthaler-  
 str. 40.  
 Wilhelm, M. J., Glasbläserei, Oberweisbach i/Th.  
 Winzer & Uhlig, Berlin, Stallschreiberstr. 59.  
 Vultejus, Arno v., Hohl- & Medizin-Façongl., Carlsfeld i/S.

## Glühlichtlampen.

*E.—Incandescent Lamp Makers.*

*F.—Lampes électriques à Incandescence.*

Greiner & Friedrichs, Stützerbach.  
 Müller, C. H. F., Hamburg.  
 Siemens, Fr., Dresden.

## Haustelegraphen-Fabriken.

*E.—Electric Bell Fitters and Contractors.*

*F.—Sonneries électriques (Poseurs de).*

Binger & Koch, Berlin, Stallschreiberstr. 56.  
 Bolle, O., Berlin, W., Behrenstr. 27.  
 Bracke, Carl, Berlin, SW., Puttkammerstr. 1.  
 BRANDT, J. A., jr., Cassel.  
 Grubert & Sohn, Berlin, Krausenstr. 18.  
 Krause & Moedebeck, Berlin, Stralauerplatz.  
 Mix & Genest, Berlin, S., Prinzessinnenstr. 1.  
 Müller, Louis, Bingen a/Rh.  
 Nöge, Herrmann, Chemnitz.  
 Ropaschinsky, Berlin, Neuenburgerstr. 9.  
 Röschke & Buschkiel, Zittau i/Sachsen.  
 Wenig, Berlin, Dresdenerstr. 90.  
 Wagner, C. Theod. Wiesbaden.  
 Wehr, G., Berlin, Ritterstr. 49.  
 Töpffer & Schädel, Berlin, Köthenerstr. 4.

## Isolatoren Fabrikanten.

*E.—Insulator Manufacturers.*

*F.—Isolateurs.*

Fischer, F., Wien, Kärntnerstrasse 61.  
 Prager Porzellan & Thonwaaren Fabrik, Smic bei Prag.  
 Villeroy & Boch, Schramberg, Württemberg

## Laboratorien.

*E.—Laboratories.*

*F.—Laboratoires.*

Braun, Dr. B. T., Rosswein, Sachsen.  
 Brunnengrüber, Dr. G., Rostock i. M.  
 Buchner, Dr. Carl, München.  
 Ebermair, Dr. E., Nürnberg.  
 Horb, W. A., Pulsnitz, Sachsen.  
 Kurz, Dr. A., Wernigerode.  
 Laborat. f. analytische Untersuch., Fabr. ch  
 Prod., Stuttgart.  
 Wittstein, Dr. A., München.

## Maschinen-Rieme.

*E.—Driving Band Manufacturers.*

*F.—Courroies de transmission.*

Bandekow, Gebr., Berlin, Lindenstr. 2.  
 Bantlin, C. D., Reutlingen.  
 Beringer, Carl, Stuttgart.  
 Dolézal, Franz, Wien, Währingerstr. 55.  
 Driessen, P., Eupen.  
 Emrich, R. L., Kusel.  
 Evertz & Grohe, Cöln.  
 Fischl, Julius, Wien, Lichtenauergasse 1.  
 Glückmann, J., Prag, Wenzelsplatz, 834.  
 Goern & Co., Berlin, Oranienstr. 81, 82.  
 Grapentien & Meyer, Berlin, Luisen-Ufer 1.  
 Grauenhorst & Co., Berlin, Adalbertstr. 59.  
 Hagen, E., & Co., Wien, Nieblungengasse 1.  
 Hanisch, W., jun., Berlin, Holzmarktstr. 8.  
 Hartmann, M., Augsburg.  
 Heusch, Hugo, Aachen.  
 Meyer, A., Braunschweig.  
 Hurling, Freiderich, Wien, Prossgasse 23.

## Maschinen-Rieme.—*Fortsetzung.*

Ibing, K., Broich.  
 Kaesse, F. W., Berlin, Elisabeth Ufer 43.  
 Kühne, F. W., Berlin, Brandenburgstr. 6.  
 Lange & Pöhler, Arnstadt, Thür.  
 Lenhart, J., Wien, Mariahilferstr. 45.  
 Moll, Riehl b/Cöln.  
 Paulsen, Adolph, München, Müllerstr. 8.  
 Persicaner & Co., Wien, Barhring 10.  
 Petzl, Jean B., Wien, Adlergasse 1.  
 Pinsdorf, Oswald, Leipzig.  
 Polenz & Richter, Berlin, Kürassierstr. 4.  
 Rack A., & Co., Wien, Praterstr. 47.  
 Rammer, Fr. Jos., Chorn bei Pulsnitz.  
 Sauer, G., Marburg.  
 Schanzenbach, Gebr., Möckmühl, Württ.  
 Schlaier, J. J., Reutlingen.  
 Schmidt & Zorn, Berlin, Kommandantenstr. 31a.  
 Schwartz, Ad., & Co., Berlin, Kochstr. 73.  
 Schmidt, C., Sohn, Breslau.  
 Selter & Eloesser, Berlin, Louisen-Ufer 7.  
 Thide & Clauss, Berlin, Neue Grünstr. 38.  
 Torrige, E., Breslau.  
 Wagner, A., Neu Sellershausen b/Leipz.  
 Wagner, Gebr., Suhl.  
 Zbörel, Wien, Waaggasse 10.

## Maschinen- & Modell Zeichner.

*E.—Designers of Models and Machinery.*

*F.—Dessinateurs.*

Bemme, C., Berlin, Blumenstr. 53.  
 Broecker, Berlin, Belforterstr. 29.  
 Lapieng, Berlin, Behrenstr. 55.  
 Röhl, Berlin, Lichterfelderstr. 8.  
 Zierow, Berlin, Prinzenstr. 23.

## Mechaniker.

*E.—Engineers—Mechanical.*

*F.—Mécaniciens.*

Albert, F. W., Frankfurt a/M., Neue Mainzerstr. 34.  
 Böhm & Wiedemann, München, Kaufingenstr. 20.  
 Bohnenstengel, Emil, Berlin, SW., Johannisstr. 16.  
 Bredemeyer, Frankfurt a/Oder.  
 Buchmeyer, F. W., Bremen.  
 Deckert, Julius, Glatz.  
 Dörffel, P., Berlin, NW., U. d. Linden 46.  
 Duncker, W., Breslau.  
 Ehrlich, Fr., Schweidnitz i/Schl.  
 Förster, H., Posen.  
 Gröper, Albin, Düsseldorf.  
 Koch, Rudolph, Göttingen.  
 Leuner, Dresden.  
 Matthäus, Paul, Görlitz.  
 Neher, Joh., München, Barerstr. 34.  
 Perge, Theodor Georg, Würzburg.  
 Pfankuch, Carl, Cöln a/Rh.  
 Rohde, P., Cöln a/Rh.  
 Schröder, Ch., Frankfurt a/M.  
 Schwerd, L. E., Karlsruhe i/B.  
 Stürm, Franz Xaver, Regensburg.  
 Wendt, Ernst Herrmann, Dresden.

## Motoren.

*E.—Motors.*

*F.—Moteurs.*

Boehm, Wien, Breitegasse 2.  
 Müller, Klask & Co., Wien, Neulerchenfeld, Gaulbachergasse 40.  
 Körting, B. & E., Wein, Carsgasse 22.  
 Schranz, C., & Rödiger, G., Wien, Dampfasse 15.  
 Bernhardt, G., & Sohne, Wien, Schönbrunnerstr. 23.

## Nickel.

*E.—Nickel.*

*F.—Nickel.*

Basse & Selve, Altena.  
 Fleitmann & Witte, Iserlohn.  
 Fleitmann & Witte, Schwerte b/Dortmund.  
 Victoriahütte, Actiengesellsch., Naumburg a/Bob.

## Optische und meteorolog. Instrumente.

*E.—Optical and Meteorological Instrument Makers.*

*F.—Instruments optiques et meteorologiques.*

Clement, Berlin, Holzgartenstr. 9.  
 Fuess, R., Berlin, Alte Jacobstr. 108.  
 Greiner, J. G., sen., & Sohn, Berlin, Kurstr. 15.  
 Obenaus, J. G., sen., Berlin, Friedrichsgracht 49.  
 Obenaus, O., jun., Berlin, Fischerbrücke 2.  
 Plath, Berlin, Kanonierstr. 43.  
 Schultze, G. A., Berlin, Schmidstr. 42.  
 Strauss, Gebr., Berlin, U. d. Linden 44.  
 Zorn, Berlin, Schenöbergerstr. 17.

## Patent-Bureaux.

*E.—Patent Offices and Agents.*

*F.—Brevets d'invention.*

Brandt, J., Berlin, Königgrätzerstr. 131.  
 Brandt & von Nawrocki, Berlin, Leipzigerstr. 124.  
 Brydges & Co., Berlin, Königgrätzerstr. 73.  
 Doepner, Berlin, Lützowstr. 13.  
 Kessler, C., & Co., Berlin, Königgrätzerstr.  
 Knoblauch & Co., Berlin, Charlottenstr. 17.  
 Lenz & Schmidt, Berlin, Grenadierstr. 8.  
 MENDEL, BERTHOLD, BERLIN, LÜTZOW-STR. 84.

## Pergament.

*E.—Parchment.*

*F.—Parchemin.*

Bechtolsheim, M. v., München.  
 Custodis & Co., Düsseldorf.  
 Dehner, C., Würzburg.  
 Dickmann, Hugo, Dortmund.  
 Klauer, H., Düsseldorf.  
 Rommel, G., Hof.  
 Körner, Joh., Nürnberg.  
 Podewils, v., & Heinze, München  
 Rube, H. & Co., Dortmund.  
 Steinmann, F., Dresden.  
 Wildpret, C., Augsburg.

## Porzellan-, Steingut- und Thonwaaren-fabrikation.

*E.—Porcelain, Stoneware, and Earthenware Manufacturers.*

*F.—Porcelaine, poterie de grès, etc.*

Bockhacker, H., Berlin.  
 Bordello, Gebr., Grünstadt, Baiern.  
 Constantinhütte bei Freiberg.  
 Degenring, Th., Katzhütte.  
 Dinse, A., Berlin.  
 Driesel, Kriesel & Co., Passau.  
 Fischer, Chr., Zwickau.  
 Gräfner, G., & Co., Pulsnitz.  
 Hoffmann & Zinkeisen, Zwickau.  
 Hölterhoff & Exner, Cöln.  
 Hutschenreuther, L., Selb b/Hof, Baiern.  
 Jörning & Sauter, Buckau-Magdeburg.  
 Jordan, J., Sohn, Darmstadt.  
 Kgl. bair. Porzellan-Manufactur Nymphenburg, Nymphenburg b/München.  
 Kgl. Porzellan-Manufactur, Meissen.  
 Laeis, Ed., & Co., Trier.  
 Langenstein & Schemann, Ernsthütte.  
 Leibe & Hoffmann, Gera.  
 Loser, A., Bendorf.  
 Mönkemöller, Bonn a. Rh.  
 Nenzel, Georg, Giessen.  
 Netzech Gebr., Selb i. Baiern.  
 Pallenberg, Jos., Mannheim.  
 Schlickeysen, C., Berlin.  
 Utzschneider & Co., Saargemünd.  
 Windisch & Kunze, Meissen.

## Physicalische Apparate.

*E.—Physical Science Apparatus Makers.*

*F.—Appareils scientifiques.*

Gallinger, Johann, Ostermünchen.  
 Hartmann, Eugen, Würzburg.  
 Kolbe, Herrmann, Halle a/S.  
 Lohner, Franz Xaver, München.  
 Stollnreuther & Sohn, München, Marsstr. 32.

## Regulator-Fabrikanten.

*E.—Governor Makers.*

*F.—Régulateurs (Fab. de).*

Buss, Somart & Co., Magdeburg.

## Röhren—Messing und Kupfer.

*E.—Tubes—Brass and Copper.*

*F.—Tuyaux—Laiton et cuivre.*

BOOTH & CO., Sheepcote-street, Birmingham.  
 Telephon Nr. 311.

## Röhren—Thon.

*E.—Earthenware Pipe Manufacturers.*

*F.—Tuyaux en grès.*

Barteldt, Berlin, Hornstr. 96.  
 Berger & Kulp, Berlin, Schönebergerstr. 22.  
 Cochius, Berlin, Ritterstr. 13.  
 Deutsche Thonröhren-Fabrik, Berlin, Mühstr. 24.  
 Deutsche Thonröhren und Chamotte-Fabrik A. Brandt, Münsterberg i/Schlesien.  
 Deutsche Thonröhren-Chamotte-Fabrik, Münsterberg.  
 Deutsche-Portland-Cement-Fabrik, Berlin, Friedrichstr. 185.  
 Glinicke, Berlin, Elisabethufer 44.  
 Goodson, Berlin, Potsdamerstr. 22.  
 Haag, Joh., Berlin, Halleschestr. 28.  
 Kammerich & Co., Berlin, Fennstr. 27.  
 Lederer & Nessényi, Wien, Operngasse 14.  
 Meyer & Co., Berlin, Trebbinerstr.  
 Rosenthal, H., Berlin, Chausseestr. 113.  
 Toeppe & Co., Berlin, Schiffbauerdamm, 16.

## Röhren—Zinn und Blei.

*E.—Pipes—Tin and Lead.*

*F.—Tuyaux—Etain et Plomb.*

Bergmann & Franz, Berlin, Köpnickerstr. 50.  
 Budde & Grehde, Berlin, Gitschinerstr. 32.  
 Jung & Lindig, Freiberg i/Sachsen.  
 Krafft, Berlin, Köpnickerstr. 116.  
 Teichelmann & Sauer, Berlin, Holzmarktstr. 4.  
 Wipprecht, vorm. Roeder & Co., Berlin, Prinzstr. 35.

## Salpeterfabrikation u. Salzmühlen.

*E.—Saltpetre and Potash Manufacturers*

*F.—Salpêtre (Fab. de).*

Sauerbrey, G., Stassfurt.

## Schmelzer und Probirer.

*E.—Assayers and Smelters.*

*F.—Essayeurs et Fondeurs.*

Barella Nachf., Berlin, Köpnickerstr. 139  
 Berliner Medaillen-Münze, Berlin, Neue Friedrichstr. 56.  
 Deppe, Berlin, Stallschreiberstr. 12.  
 Flügge & Rietz, Berlin, Brandenburgstr. 61.  
 Hirschfeld & Meyerheim, Berlin, Adalbertstr. 40.  
 Lipke, Gebr., Berlin, Prinzenstr. 84.  
 Meyer, N. & Co., Berlin, Sebastianstr. 20.  
 Sy & Wagener, Berlin, Kronenstr. 28.  
 Voeltzkow jr., Berlin, Sebastianstr. 76.

## Sonstige Artikel für Elektriker.

*E.—Electrical Sundries.*

*F.—Appareils électriques*

Buchholz, Rob., Remscheid.  
 Heine, Gebr., Offenbach a/M.  
 Prinz & Blacke, Altena.  
 Wolff, Carl, Nürnberg, Frauenthormauer 42.



**Schrauben und Feilen.**

*Screws and Files—Manufacturers of.*  
*F.—Vis et limes.*

. für Feilen Fabric., Berlin, Chaussee-  
 inrich, Berlin, C., Friedrichstr. 131.  
 Madler, Berlin, Eisenbahnstr. 5.  
 & Hundt, Berlin, Waldemarstr. 27.  
 ilenfabrik, Berlin, Schwedterstr. 16.  
 chmiede-Gesellschaft, Berlin Reinicken-  
 str. 64.  
 arlottenburg bei Berlin.  
 Zorn, Berlin, Weinmeisterstr. 14.  
 ich & Co., Berlin, Fennstr. 27.  
 Dressler, Berlin, Hollmanstr. 35.  
 Roelke, Berlin, Prinzenstr. 33.  
 J. G. & Söhne, St. Georgen, Schwarzwald.

**nale, Weichen und Schienen.**

*Manufacturers of Railway Signals & Switches.*  
*-Signaux et aiguilles de chemins de fer.*

V., München.  
 W., Pieschen bei Dresden.  
 Rosenkranz & Drüge, Hannover.  
 J., & Co., Kükelhausen.  
 Dr. G., Reichenhall.  
 he Stahlwerke, Ruhrort.  
 Eisenwerke, Radeburg i/Sachsen.  
 C. G., Chemnitz.  
 & Henning, Bruchsal, Baden.  
 C. E. & C., Carlsruhe.  
 Jos., Mannheim.  
 nüller, H., Speyer.

**Steingut.**

*E.—Stoneware Manufacturers.*

*F.—Tuyaux en poterie.*

& Co., Saarbrücken.  
 oh., Kehlheim.  
 luard, Amberg,  
 J., Frechen b/Cöln.

**Talg.**

*E.—Talc.*

*F.—Talc.*

nn, H., Barmen.  
 Gebr., Breslau.  
 or, S., Ehrenfeld.  
 Vogel, Hamm, Westph.  
 & Fuchs, Kempten.  
 C. G., Leipzig, Brühl 58.  
 , Gebr., München.  
 J., Werther.

**Technische Zeitschriften.**

*E.—Scientific Publications.*

*F.—Publications scientifiques.*

nes Journal für Uhrmacherkunst, Leipzig.  
 t der Deutschen Reichs-, Post- & Telegra-  
 Verwaltung, Reichspostamt, Berlin.  
 der Hydrographie, Kaiserl. Admiralität,

**Technische Zeitschriften.—Fortsetzung.**

*Annalen der Physik und Chemie, Leipzig.*  
*Annalen für Gewerbe & Bauwesen, Berlin.*  
*Archiv für die Artillerie- und Ingenieur-Offiziere*  
*des deutschen Reichsheeres, Berlin.*  
*Archiv für Post & Telegraphie, Reichspostamt,*  
*Berlin.*  
*Baugewerkzeitung, Berlin.*  
*Berichte der deutschen chemischen Gesellschaft,*  
*Berlin.*  
*Centralblatt der Bauverwaltung, Berlin.*  
*Central-Zeitung für Optik und Mechanik, Leipzig.*  
*Chemiker-Zeitung, Cöthen.*  
*Chemisch-technisches Repertorium, Berlin.*  
*Der Metallarbeiter, Berlin.*  
*Deutsche Allgemeine Politechnische Zeitung, Berlin.*  
*Deutsche Bauzeitung, Berlin.*  
*Deutsche Industriezeitung, Chemnitz i/Sachsen.*  
*Deutsches Patent-Blatt, Kaiserl. Patent-Amt,*  
*Berlin.*  
*Die chemische Industrie, Berlin.*  
*Dingler's Politechnisches Journal, Stuttgart.*  
*Eisenbahn-Verordnungsblatt, Königl. Ministerium*  
*der öffentl. Arbeiten, Berlin.*  
*Eisen-Zeitung, Berlin.*  
*Electro-Technische Zeitschrift, Berlin.*  
*Fortschritte der Physik, Berlin.*  
*Gerber-Zeitung, Berlin.*  
*Hausingers's Organ für Fortschritte des Eisenbahn-*  
*wesens, Wiesbaden.*  
*Jahrbuch der Erfindungen und Fortschritte auf*  
*physikalischem Gebiete, Leipzig.*  
*Journal für Gasbeleuchtung und Wasserversorgung,*  
*München und Leipzig.*  
*Literarischer Anzeiger für Berg-, Hütten-, Maschi-*  
*nwesen und für verwandte technische Zweige,*  
*Berlin.*  
*Repertorium für Experimental-Physik und für phy-*  
*sikalische Technik, München.*  
*Verhandlungen der Politechnischen Gesellschaft,*  
*Berlin.*  
*Wochenblatt des Vereins deutscher Ingenieure,*  
*Berlin.*  
*Wochenblatt für Architekten & Ingenieure, Berlin.*  
*Zeitschrift für angewandte Electricitätslehre,*  
*München.*  
*Zeitschrift für Bauwesen, Berlin.*  
*Zeitschrift für Berg-, Hütten- und Salinenwesen im*  
*preuss. Staate, Berlin.*  
*Zeitschrift für Instrumenten-Kunde, Berlin.*  
*Zeitschrift für Mathematik und Physik, Leipzig.*  
*Zeitung des Vereins deutscher Eisenbahn-Verwal-*  
*tungen, Berlin.*

**Telegraphenbau-Anstalten.**

*E.—Contractors for Telegraph Installations.*

*F.—Télégraphes (Entrepreneurs de).*

Baur, G., Stuttgart.  
 Becker, Berlin, Johanniterstr. 8.  
 Borghausen, B. & Co., Cöln.  
 Buffleb, Ad., Dresden, Pragerstr. 25.  
 Elsner & Co., Berlin, Seydelstr. 27.

**Telegraphenbau-Anstalten.—Fortsetzung.**

Felten & Guillaume, Cöln.  
 Gurlt, Berlin, Friedrichstr. 24.  
 Hannoman, Herrm. Berlin, Besselstr. 17  
 Henning & Wentzke, Berlin, Alexanderstr. 29.  
 Hipp, M., Neuchâtel.  
 Horn, W., Berlin, Kommandantenstr. 45.  
 Kaiser & Schmidt, Berlin, Johannisstr. 20.  
 Kaiser & Schmidt, Berlin, N., Johannisstr. 20.  
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 Pöge, Herrm., Chemnitz.  
 Reutzsch, Louis, Meissen i/Sachsen.  
 Schiebeck & Plentz, Berlin, Neuenburgerstr. 19.  
 Siemens & Halscke, Berlin, Markgrafenstr.  
 Schomburg, Herrmann, Berlin, NW., Alt-Moabit  
 20.  
 Wagner, C. Theod., Wiesbaden.  
 Wehr, G., Berlin, SW., Ritterstr. 49.  
 Wiesenthal, Aachen.

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*F.—Câbles et fils isolés (Fab. de).*

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 Naglo, Gebr., Berlin, Waldemarstr. 44 O.  
 Obermeyer, J., Nürnberg.  
 Pauly, G., & Co., Mengen i/Wbg.  
 Römisch, Berlin, Naunynstr. 41.  
 Rubach, Berlin, Lichtenbergerstr. 13.  
 Sasserath, F. A., Berlin, SO., Schmidtstr. 37.  
 SPEISER, CARL, NÜRNBERG.  
 Vogel, C. J., Berlin, SO., Ritterstr. 39.  
 Zöluich, Franz, Wien, Zieglergasse 22.

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*F.—Appareils Télégraphiques et Téléphoniques.*

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 Berliner, J., Hannover, Neuestrasse 1.  
 Dross, Ferdinand Berlin, Louisen, Ufer 27.  
 Egger, B., Budapest, Rudolfs Quai 8.  
 Kagl, Carl, Pressburg, Schöndorferstrasse 7.  
 Machalstri, Heinrich, Lemberg, Kopernicusgasse  
 19.  
 Mix & Genst, Berlin S. Wasserthorstr. 34.  
 Poehlmann, Carl, Nürnberg.  
 Pöge, Hermann, Chemnitz, Sachsen.  
 Roth, Adalbert, Wien, Hundstürmerstr. 23.  
 Schäfer & Montanus, Frankfurt, a/M.  
 Schaffler, O., Wien, Halbgasse 26.  
 Schwerdt, L. E., Karlsruhe.  
 Wehr, G., Berlin, alte Jacobsstr. 35.  
 Wolters, W., Wien, Karntnerstr. 30.  
 Zimmer, Josef, Furtwangen, Baden.

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*E.—Telephone Contractors.*

*F.—Téléphones (Entrepreneurs de).*

American Telephone Co., Limited, Rotterdam.  
 Baur, Gust., Stuttgart.  
 Iserhardt, Gustav, Rheydt i/W.  
 Kummer, O. L., & Co., Dresden, Waisenhaus  
 27.  
 Mack, Joh. W., Frankfurt a/M.  
 Maier, Albert, München.  
 Nieter, H., Altona.

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 Berliner, J., Hannover.  
 De Locht-Labye, L., Lüttich.  
 Einstein, J., & Co., München.  
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 Fein, C. E., Stuttgart.  
 Grosse, J. G., Dresden, Neustadt.  
 Heller, F., Nürnberg.  
 Heller, R., Nürnberg.  
 Lamberg, A. W., Linz.  
 Maier, A., München.  
 Mix & Genest, Berlin, Prinzessinnenstr. 23  
 Schäfer & Montanus, Frankfurt a/M.  
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 Stein, Dr. Th. Sigm., Frankfurt a/M.  
 Tenner, A., Berlin.  
 Wagner, Albert, Annaberg, Sachsen, Hüg-  
 grund.  
 Wehr, G., Berlin.  
 Zelweiger & Ehrenburg, München.

**Umspinnener Draht und Kabel Fabriken.**

*E.—Covered wire manufacturers.*

*F.—Fils isolés.*

Action Gesellschaft der Metall fabrik, V  
 Schönlaterngasse 11.  
 Adler, W., & Co., Wien, Louisengasse 15.  
 Perci, M., Budapest, Marie Valeriegasse 10  
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 Electric Works, Neston, Cheshire, Eng  
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ziana, 82, Milan, Italy.

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*G.—Dynamo-Maschinen.*

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Jringer, Professor E., Kopenhagen.

Klimenko, Alexis Wassiljowitch, Karkow, Russia.

Rebikoff, Wassilij Iwanowitch, Pretetchinskaja,  
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*F.—Sonneries Electriques.*

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Société d'Eclairage Electrique en Russie, Candl. Obwodny, 86, St. Petersburg.

Tichomiroff, Wassilij Alexandrowitch, Baranowo, Russia.

Electro-technic Company, St. Petersburg.

Jablotschkow, T. N., Obwodni, 86, St. Petersburg.

Tchikoleff, Wladimir Nikolajewitch, à l'administration centrale de l'artillerie russe, St. Petersburg.

**Electrical Apparatus Makers.**

*F.—Instruments Electriques.*

*G.—Electrische Instrumente.*

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Ericsson, L. M. & Co., Stockholm.

Greiner, H., Roschestwenka, house Belaep, Moscow.

Lund, C. F., Copenhagen, Blegdamsvejen, 32.

Mielek & Co., Great Morskaja, 39, St. Petersburg.

Petsch, B., Makatowskaia, 23, Warsaw.

Piek, J., Medowaia, 497, Warsaw.

Richter, O. B., Admiralit.-square, 1/4, St. Petersburg.

Salles, W. & Wernier, A., Kusnetzki-bridge, house Gagarine, Moscow.

Schwabe, Kusnetzki-bridge, house Torletzki, Moscow.

Seeger, F., Kusnetzki-bridge, house Torletzki, Moscow.

Trindin, E. & Sons, Loubianka, house Trindin, Moscow.

Zellweger et Ehrenberg, Uster, Suisse.

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*G.—Ingenieure.*

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Bouliguine, Nicolai Pawlowitch, Wassily Ostroff, 15, Linge, 2, St. Petersburg.

Daniloff, M. A., Sadowaia, house Daruloff, Moscow.

Dettmann, Heiner, Riga.

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Dolivo-Dobrowolstry, Michel Ossipowitch, Russia.

Johannson, K. J., near Krasni Worota.

Rodionoff, Paul Rostislawowitch, Zsch Zschernaja Retschka, 17, St. Petersburg.

Wreden, Robert Robertowitch, Swenigorod 6, St. Petersburg.

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*F.—Machines Electriques—Fabr.*

*G.—Electrische Maschinen.*

Siemens & Halscke, Wassili Ostrow, 1st li Petersburg.

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*F.—Jouets Electriques.*

*G.—Electrische Spielzeug.*

Fenoax & Co., Newski Prospect, No. 40, Petersburg.

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*F.—Electriciens.*

*G.—Elektriker.*

Deschewoff, M. M., Panteleimonowskaja, Petersburg.

Dobrochotoff & Maikow, A. W., Pown house Pereversiauw, Moscow.

Geritsch, T., of the Nowarossinsky Univ Odessa.

Kraewski, E. F., Miersnitzkaja, house Central Telegraph, Moscow.

Kretschmar, O. K., Tareskoi Boulevard, Stroew, Moscow.

Liadoff, A. P., Jaroslaw Railway, station nowo.

Tichomiroff, W. A., Jaroslaw Railway, Baranowo.

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*F.—Appareils Electro-Médicales.*

*G.—Electro-medische Apparate.*

Franco, Adolphe Loares, Lisbon, rua du Ia Kaier, J. J., Twerskaja, house Zikine, Mo

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*F.—Galvanoplastie.*

*G.—Galvanoplastik.*

Kowako, A. H., Porskowski-square, 9 Petersburg.

Romanenko, W. F., Pakrowska, house Sch low, Moscow.



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*F.—Caoutchouc—Fabr.*

*G.—India Rubber and Gummi—Fabr.*

Russian-American India-Rubber Co., St. Petersburg.

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*F.—Paratonnerres.*

*G.—Blitzableiter-Fabrikanten.*

Società anonima Generale Italiana di Telefoni ed applicazione elettriche, Naples, via Medina, 24.

**Microphones.**

*F.—Microphones.*

*G.—Microphonen.*

Constantin de Charrierès, St. Petersburg.  
Déchéwoff, Michel Michailowitch, Fontanka, 132,  
St Petersburg.

Michailowitch, Léonide, Jwanoff, Ingénieur  
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*F.—Bureaux de Brevets.*

*G.—Patent Bureau.*

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*F.—Vases Poreux.*

*G.—Glocken für Batterien.*

Société Céramique Richard, Milan, St. Christo-  
foro, 186.

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*G.—Dampfkessel—Fabr.*

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*F.—Appareils Télégraphiques.*

*G.—Telegraphische Apparate.*

Castelli, Basile, à Provezze, Italie.

Lucchesini, Alex., Villa Giovanelli, Viale dei  
Colli, Florence.

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*F.—Codificateurs Télégraphiques.*

*G.—Codes für Telegraphie.*

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*G.—Telephonen.*

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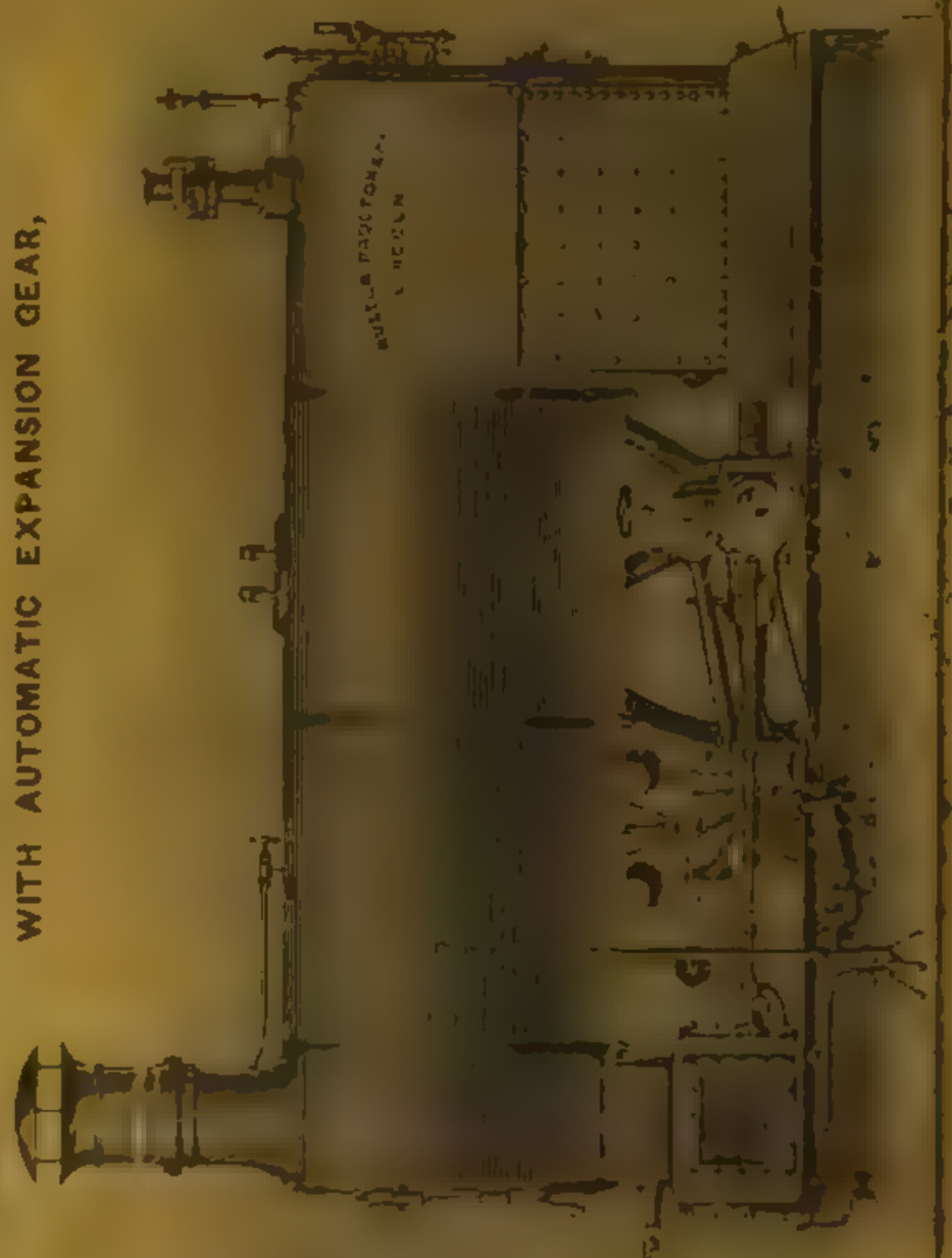
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